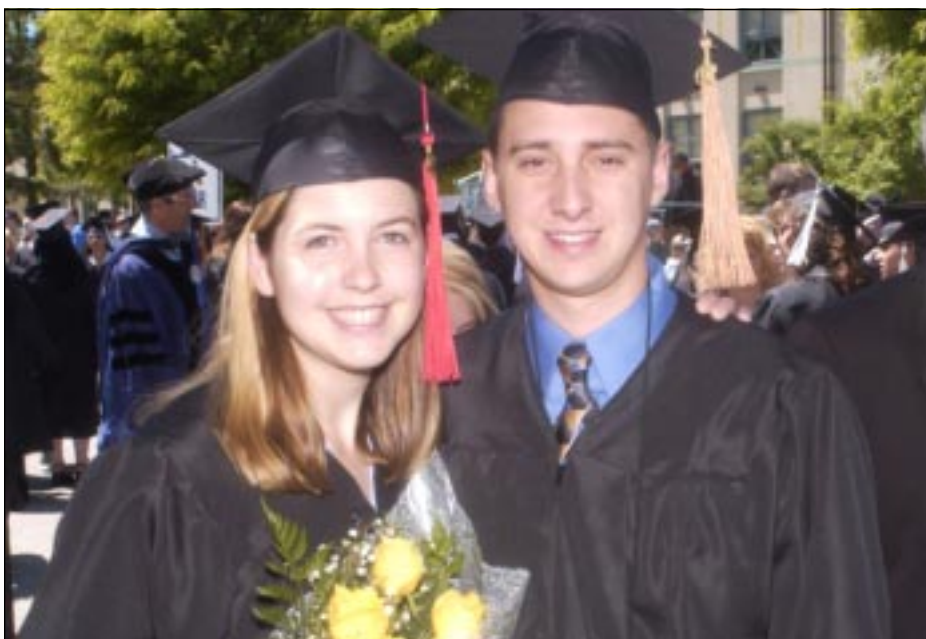


# *University* *of* **Rhode Island**



**2002–2003 ACADEMIC YEAR**  
**UNDERGRADUATE AND GRADUATE CATALOG**  
**401-874-1000   [WWW.URI.EDU](http://WWW.URI.EDU)**

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## CONTENTS

4	The University
6	Undergraduate and Graduate Degrees
11	Student Life and Services
18	Enrollment Services
28	Undergraduate Admission
32	Undergraduate Program Requirements
45	Undergraduate Programs
	University College and Special Academic Programs
	College of Arts and Sciences
	College of Business Administration
	Alan Shawn Feinstein
	College of Continuing Education
	College of Engineering
	College of the Environment and Life Sciences
	College of Human Science and Services
	College of Nursing
	College of Pharmacy
112	Graduate Admission and Registration
116	Graduate Program Requirements
119	Graduate Programs
153	Courses of Instruction
288	Directories
321	Appendix
	Loan Funds, Scholarships, and Special Awards
	Summary of Enrollment
	URI Timeline
324	Campus Map
325	Index

This catalog and other relevant information may also be accessed online at [www.uri.edu/catalog/](http://www.uri.edu/catalog/).

If you have questions about admissions procedures, please contact Undergraduate Admissions at 401-874-7100 or Graduate Admissions at 401-874-2872.

8/02/23M Produced by the URI Publications Office, Division of University Advancement. Cover photo by Nora Lewis; inside photos by Peter Finger, Nora Lewis, Mike Salerno, and David Silverman.



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# 2002–2003 UNIVERSITY CALENDAR

*This calendar applies to undergraduate and graduate students enrolled at URI's Kingston and Providence Campuses.  
For dates specific to candidates for graduate degrees, see pages 114–115.*

## Fall Semester 2002

Labor Day, no classes,  
offices closed  
Sept. 2

Advising Day  
Sept. 3

Classes begin  
Sept. 4

Last day to drop  
"early drop" courses  
Sept. 13

Last day to add courses  
and pass/fail option  
Sept. 17

Columbus Day,  
no classes, offices closed  
Oct. 14

Monday classes meet  
Oct. 16

Midsemester and last day  
for students to change  
from pass/fail option  
Oct. 18

Midterm grades for  
freshmen due in Office of  
Enrollment Services  
Oct. 21

Last day for students to  
drop courses  
Oct. 25

Veteran's Day,  
no classes, offices closed  
Nov. 11

Thanksgiving recess,  
no classes  
Nov. 28–Dec. 1

Classes end  
Dec. 9

Reading days  
Dec. 10–11

Final examinations  
Dec. 12–13, 16–20

Final grades due in  
Enrollment Services  
Dec. 24, by 1 p.m.

## Spring Semester 2003

Classes begin  
Jan. 21

Last day to drop  
"early drop" courses  
Jan. 30

Last day to add courses  
and pass/fail option  
Feb. 3

Washington's Birthday,  
no classes, offices open  
Feb. 17

Monday classes meet  
Feb. 18

Spring break,  
no classes, offices open  
March 10–16

Midsemester and last day  
for students to change  
from pass/fail option  
March 18

Midterm grades for freshmen  
due in Enrollment Services  
March 19

Last day for students to  
drop courses  
March 21

Classes end  
May 6

Reading days  
May 7–8

Final examinations  
May 9–10, 12–16

Commencement  
May 18

Final grades due in  
Enrollment Services  
May 20, by 1 p.m.

## Summer Session 2003

Term I  
May 19–June 20

Term II  
June 23–July 25

*In case of major storms or other circumstances, changes may be made in the academic calendar when it is in the best interests of the institution, without prior notice to students.*

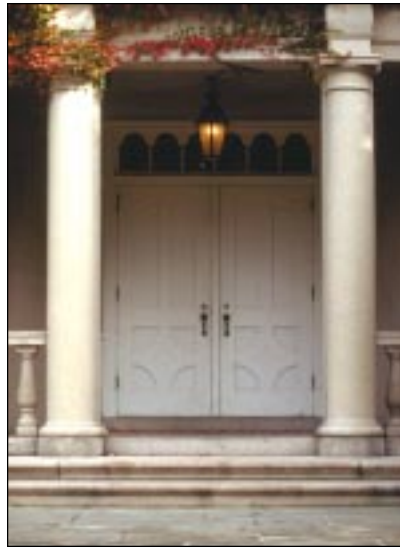
# THE UNIVERSITY

The University of Rhode Island is a medium-sized state university with its primary campus in the southern part of Rhode Island in the village of Kingston. In part because of its unique location near the ocean and six miles from Narragansett Bay, the University has developed strong marine programs and has been designated a national Sea Grant institution.

The University enrolls about 11,000 undergraduate and 3,200 graduate students, and has a full-time tenure-track teaching faculty of approximately 600.

**Mission.** The University of Rhode Island is the principal public research and graduate institution in the state of Rhode Island with responsibilities for expanding knowledge, for transmitting it, and for fostering its application. Its status as a land-grant, sea-grant, and urban-grant institution highlights its traditions of research, teaching, and service in the areas of natural resources, marine sciences, and the urban environment. The University is committed to providing strong undergraduate programs to promote students' ethical development and capabilities as critical and independent thinkers. To meet student and societal needs, we offer undergraduate professional education programs in a wide range of disciplines. Graduate programs provide rigorous advanced study and research opportunities for personal and professional development. With undergraduate and graduate programs in the liberal arts and sciences and focus programs in the areas of marine and environmental studies; health; children, families, and communities; and enterprise and advanced technology, the University strives to meet the rapidly changing needs of the state, the country, and the world.

To help achieve the teaching, research, and service objectives and to extend intellectual, cultural, and social horizons, the University offers a variety of special pro-



grams, including opportunities for learning outside the classroom and for community service. Committed to effective learning, the University encourages close student-faculty interaction. Distinctive programs such as interdisciplinary research partnerships involving faculty, students, and practitioners from within and outside the University are supported. We collaborate with governmental and other agencies, with other educational institutions, and with industry. We maintain extensive outreach and continuing education programs. The University sponsors an extensive array of

concerts, performances, and exhibitions in music, theater, and other fine arts, and maintains significant recreational facilities and notable programs in intramural and intercollegiate athletics.

The University seeks talented undergraduate and graduate students, faculty, and staff from a wide array of cultural, economic, and ethnic backgrounds to collaborate in an intellectual and social community of mutual respect, to learn, to be enriched, and to produce significant research and scholarly and creative works. URI's students in all their diversity—from Rhode Island, across the country, and around the globe—are expected to be active participants both in and beyond the classroom. Their performance, potential, and commitment mark them as capable of advanced study and as future leaders.

To fulfill its special obligations to the state of Rhode Island, the University cooperates in offering programs with other Rhode Island institutions of higher education, public and private. We are committed, through cooperative governance, to an on-going evaluation of programs, priorities, and processes in order to improve existing programs and to anticipate changing needs and new challenges. Aspiring to have a quality and extent of influence beyond the state, with breadth of vision and boldness of approach, the University of Rhode Island strives for excellence for Rhode Island and for the country.

**Campuses.** The University has a spacious rural campus 30 miles south of Providence in the northeastern metropolitan corridor between New York and Boston. The center of campus is a quadrangle of handsome, old granite buildings surrounded by newer academic buildings, student residence halls, and fraternity and sorority houses. On the plain below Kingston Hill are gymnasiums, athletic fields, tennis courts, a freshwater pond, agricultural fields, and the University's new Thomas M. Ryan Center.

In addition to the Kingston Campus, the University has three other campuses. The Alan Shawn Feinstein College of Continuing Education is located in Rhode Island's capitol city of Providence, where it serves more than 4,000 students with convenient programs ranging from the Bachelor of General Studies, an undergraduate program with various majors for adults returning to school, to master's degrees and certificate programs for those looking to expand their professional options. The Narragansett Bay Campus, six miles to the east of the Kingston campus, overlooks the West Passage of Rhode Island's prized Bay and is the site of the URI's Graduate School of Oceanography. In the western part of Rhode Island, just 20 miles from Kingston, is URI's W. Alton Jones Campus; its 2,300 acres of woods, fields, streams, and ponds are the site of environmental education, research, and conference facilities.

**History.** The University was chartered as the state's agricultural school in 1888. The Oliver Watson farm was purchased as a site for the school, and the old farmhouse, now restored, still stands on the campus. The school became the Rhode Island College of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

The Morrill Act of 1862 provided for the sale of public lands. Income from these sales was to be used to create at least one college in each state with the principal purpose of teaching agriculture and mechanic arts. From this grant of land comes the term "land grant," which applied to the national system of state colleges. In a later adaptation of the concept, federal funds given to colleges for marine research and extension are called "sea grants."

In 1909 the name of the college was changed to Rhode Island State College, and the program of study was revised and expanded. In 1951 the college became the University of Rhode Island by an act of the General Assembly. The Board of Governors for Higher Education appointed by the

governor became the governing body of the University in 1981. A historical timeline can be found at the end of this catalog.

## Programs of Study

**Undergraduate Study.** All programs aim at a balance of studies of the natural and social sciences, the humanities, and professional subjects. The courses and programs of study have been approved by national accrediting agencies and are accepted for credit by other approved institutions of higher education (see page 9).

Undergraduate students can earn the following degrees at URI:

Bachelor of Arts  
Bachelor of Science  
Bachelor of Fine Arts  
Bachelor of Landscape Architecture  
Bachelor of Music  
Bachelor of General Studies (Feinstein College of Continuing Education only)

URI's College of Pharmacy also offers a six-year entry-level program, leading to the Pharm.D. degree.

All Kingston freshmen who enter the University to earn a bachelor's degree are first enrolled in University College. All undergraduates at the University, whether at our Kingston or Providence campuses, have a wide choice of programs from which to choose a major, and our advising programs provide help in making this important decision and in choosing appropriate courses.

**Graduate Study.** Graduate study at the University was inaugurated in 1907 with Master of Science degrees in chemistry and engineering. The Master of Arts degree was first awarded in 1951, and in 1960 the University awarded its first Doctor of Philosophy degree. Graduate work for professional degrees was initiated in 1962, when the degree of Master of Public Administration was first awarded. Today, the master's degree is offered in 54 areas of study and the doctorate in 38 areas. To date, over 18,000 master's degrees and 2,200 doctoral degrees have been

conferred. Students may earn the following degrees:

Master of Arts  
Master of Science  
Master of Business Administration  
Master of Community Planning  
Master of Library and Information Studies  
Master of Marine Affairs  
Master of Music  
Master of Oceanography  
Master of Public Administration  
Doctor of Philosophy

The University also offers two joint programs with Roger Williams University, the M.S./J.D. in labor relations and human resources, and the M.M.A./J.D. in marine affairs. Additionally, the University cooperates with Rhode Island College in offering a joint Ph.D. degree in education.

The Graduate School has primary responsibility for administering policies and procedures relating to advanced study at URI. Graduate School policy is formulated by graduate faculty members, acting through their delegate body, the Graduate Council, which includes student members. Only the Graduate School or the Graduate Council can grant exceptions to the regulations for graduate study, which are explained in detail in the "Graduate Programs" section.

The University's graduate programs of study are listed on the following page. Work in a combination of special areas is often possible. Graduate-level course work applicable to a number of these programs is offered in several locations throughout the state by the Alan Shawn Feinstein College of Continuing Education. In most cases, however, a portion of the courses must be taken on the Kingston Campus.

Students with a bachelor's degree from URI or another university with equivalent requirements and accreditation may be admitted for graduate study, providing their credentials meet the standards set by the Graduate School and the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for admission are an approximate undergraduate

## Undergraduate Degrees

### College of Arts and Sciences

African and African-American Studies  
(*joint URI-RIC*): B.A.  
Anthropology: B.A.  
Applied Sociology: B.S.  
Art: B.F.A.  
Art History: B.A.  
Art Studio: B.A.  
Biological Sciences: B.S.  
Biology: B.A.  
Chemistry: B.A., B.S.  
Chemistry and Chemical  
Oceanography: B.S.  
Classical Studies: B.A.  
Communication Studies: B.A.  
Comparative Literature Studies: B.A.  
Computer Science: B.A., B.S.  
Economics: B.A., B.S.  
English: B.A.  
Environmental Plant Biology: B.S.  
French: B.A.  
German: B.A.  
History: B.A.  
Italian: B.A.  
Journalism: B.A.  
Latin American Studies: B.A.  
Marine Biology: B.S.  
Mathematics: B.A., B.S.

Music: B.A.  
Music Composition: B.M.  
Music Education: B.M.  
Music Performance: B.M.  
Philosophy: B.A.  
Physics: B.A., B.S.  
Physics and Physical Oceanography: B.S.  
Political Science: B.A.  
Psychology: B.A.  
Public Relations: B.A.  
Sociology: B.A.  
Spanish: B.A.  
Theatre: B.F.A.  
Women's Studies: B.A.

### College of Business Administration

Accounting: B.S.  
Finance: B.S.  
Financial Services: B.S.  
General Business Administration: B.S.  
International Business: B.S.  
Management: B.S.  
Management Information Systems: B.S.  
Marketing: B.S.

### Alan Shawn Feinstein College of Continuing Education

Bachelor of General Studies: B.G.S.

### College of Engineering

Biomedical Engineering: B.S.  
Chemical Engineering: B.S.  
Chemical and Ocean Engineering: B.S.  
Civil Engineering: B.S.  
Computer Engineering: B.S.  
Electrical Engineering: B.S.  
Industrial Engineering: B.S.  
Mechanical Engineering: B.S.  
Ocean Engineering: B.S.

### College of the Environment and Life Sciences

Animal Science and Technology: B.S.  
Aquaculture and Fishery Technology: B.S.  
Clinical Laboratory Science: B.S.  
Coastal and Marine Policy and  
Management: B.S.  
Coastal and Marine Policy Studies: B.A.  
Environmental Economics and  
Management: B.S.  
Environmental Plant Biology: B.S.  
Environmental Science and  
Management: B.S.  
Geology and Geological  
Oceanography: B.S.  
Geosciences: B.S.  
Landscape Architecture: B.L.A.  
Marine Resource Development: B.S.\*

Microbiology: B.S.  
Nutrition and Dietetics: B.S.  
Resource Economics and Commerce:  
B.S.  
Urban Horticulture and Turfgrass  
Management: B.S.  
Water and Soil Science: B.S.  
Wildlife and Conservation Biology: B.S.

### College of Human Science and Services

Communicative Disorders: B.S.  
Dental Hygiene (*joint URI-CCRI or post-  
clinical*): B.S.  
Education: Elementary B.A.  
Secondary B.A., B.S.  
Human Development and Family  
Studies: B.S.  
Human Science and Services: B.S.  
Physical Education: B.S.  
Textile Marketing: B.S.  
Textiles, Fashion Merchandising, and  
Design: B.S.

### College of Nursing

Nursing: B.S.

### College of Pharmacy

Pharm.D. (*six-year entry level*)

\* This degree is no longer open to incoming students.

## Graduate Degrees

### Master of Arts

Communication Studies  
Education  
English  
History  
Marine Affairs  
Political Science  
Spanish

### Master of Science

Accounting  
Applied Pharmaceutical Sciences  
Audiology  
Biological Sciences  
Cell and Molecular Biology  
Chemical Engineering  
Chemistry  
Civil and Environmental Engineering  
Clinical Laboratory Science  
Computer Science  
Electrical Engineering  
Environmental and Natural Resource  
Economics  
Environmental Sciences  
•Entomology  
•Geosciences  
•Natural Resources Science  
•Plant Sciences  
Fisheries, Animal, and Veterinary  
Science

Human Development and Family Studies  
•College Student Personnel  
•Human Development and Family  
Studies  
•Marriage and Family Therapy  
Labor Relations and Human Resources  
(*M.S. or joint M.S./J.D.-RWU*)  
Manufacturing Engineering  
Mathematics  
Mechanical Engineering and Applied  
Mechanics  
Medicinal Chemistry  
Nursing  
Nutrition and Food Sciences  
Ocean Engineering  
Oceanography  
Pharmacognosy  
Pharmacology and Toxicology  
Physical Education and Exercise Science  
Physical Therapy  
Physics  
Psychology: School  
Speech-Language Pathology  
Statistics  
Textiles, Fashion Merchandising,  
and Design

### Doctor of Philosophy

Applied Mathematical Sciences  
•Applied Mathematics  
•Computer Science

•Operations Research  
•Statistics  
Applied Pharmaceutical Sciences  
Biological Sciences  
Business Administration  
•Finance and Insurance  
•Management  
•Management Science  
•Marketing  
Cell and Molecular Biology  
Chemical Engineering  
Chemistry  
Civil and Environmental Engineering  
Education (*joint URI-RIC*)  
Electrical Engineering  
English  
Environmental and Natural Resource  
Economics  
Environmental Sciences  
•Entomology  
•Fisheries, Animal, and  
Veterinary Science  
•Geosciences  
•Natural Resources Science  
•Plant Sciences  
Industrial and Manufacturing  
Engineering  
Marine Affairs  
Mathematics  
Mechanical Engineering and  
Applied Mechanics

Medicinal Chemistry  
Nursing  
Nutrition and Food Sciences  
Ocean Engineering  
Oceanography  
Pharmacognosy  
Pharmacology and Toxicology  
Physics  
Psychology  
•Clinical  
•Experimental  
•School

### Professional Degrees

Master of Business Administration  
(M.B.A.)  
Master of Community Planning (M.C.P.)  
(*also joint M.C.P./J.D.-RWU*)  
Master of Environmental Science and  
Management (M.E.S.M.)\*  
Master of Library and Information  
Studies (M.L.I.S.)  
Master of Marine Affairs (M.M.A.)  
(*also joint M.M.A./J.D.-RWU*)  
Master of Music (M.M.)  
Master of Oceanography (M.O.)  
Master of Public Administration (M.P.A.)  
(*joint URI-RIC*)  
Teacher Certification

\* pending approval of the Board of Governors

average of B or better and, where required, satisfactory scores on a nationally administered examination.

## Information Services and Research Resources

**University Libraries.** Integrated library and computational services are provided by URI's Office of Information Services (OIS). URI has a library collection of over 1.1 million volumes, 750,000 government publications, and over 1.5 million microforms housed in the University Library in Kingston, at the Alan Shawn Feinstein College of Continuing Education in Providence, and in the Pell Marine Science Library on the Narragansett Bay Campus. The latter was designated the National Sea Grant Depository in 1971.

The University Library, which holds the bulk of the collection, has open stacks that provide direct access to books, periodicals, documents, maps, microforms, and audiovisual materials. The library also provides online access to a substantial and growing amount of electronic resources. The Special Collections Department collects and maintains rare books, manuscripts, the University archives, and a variety of special interest materials. Service hours at the other libraries vary, but the University Library provides full reference, bibliographic, and circulation services during most of the 100 hours a week it is open.

The University is a member of the Higher Education Library Information Network (HELIN), which extends borrowing privileges to the faculty, staff, and students of the Community College of Rhode Island, Rhode Island College, Johnson & Wales University, Providence College, Roger Williams University, Bryant College, as well as the University of Rhode Island. Holdings of all these libraries are included in the on-line public access catalog.

**Information Services.** The Office of Information Services (OIS) provides computational resources to the University community for instruction and research. OIS maintains central server support, general

purpose computing facilities, student personal computing resources, and a high-speed network. All enrolled students are provided with a network ID which enables them to use OIS facilities including access to electronic mail services and the Internet. Our staff provide a variety of services to support these facilities and assist the University community.

Centralized general purpose computing at URI is supported on an IBM RISC system/6000 Model J40 running AIX 4.3.2. A full complement of programming languages and packages is available. Facilities for computer graphics are also offered, including a color plotter. Several hundred personal computers and workstations are located in public work areas, and most private offices are equipped with computing resources. These devices are connected to the campus Ethernet which provides access to the Office of Information Services, as well as independent college and departmental facilities.

URI's Office of Information Services manages numerous personal computer laboratories on campus, featuring both IBM and Macintosh workstations. A wide variety of software application packages are available. These labs are available for faculty research, teaching, and general student use. In addition, a number of laboratories are specifically designed for use as computer classrooms.

**Other Research Facilities.** As the principal public research institution in the state of Rhode Island, a number of innovative research facilities can be found at URI. These include the facilities found at URI's Narragansett Bay Campus, the College of Engineering's Kirk Computer Center, chemistry laboratories, and marine research laboratories, including a 12,000-square-foot research aquarium. The *Endeavor* is the University's "offshore" research vessel, a 184-foot ship operated by the Graduate School of Oceanography. *Endeavor* is capable of working in all parts of the world's oceans. The Bay Campus also is home to the Rhode Island Nuclear Science Center, where scientists have access to a research reactor for chemical

analysis by neutron activation and mass spectrometry. Other significant Bay Campus research facilities include the Marine Ecosystems Research Laboratory where large-scale marine ecosystem experiments are conducted; the Marine Geological Samples Laboratory, a virtual reality simulator used to study ocean and atmospheric circulation; and acoustic calibration and model tow tanks.

URI's research facilities are as varied as our programs of study. Our College of Nursing possesses practice laboratories for students with a variety of equipment, and the Department of Plant Sciences operates 50 acres of research and education farm centers, including the C. Richard Skogley Turfgrass Center, the oldest research and teaching program in the U.S. URI's entomology program also has a biological quarantine laboratory, the only such university-affiliated facility in the Northeast. Our physical therapy program has a clinical service and research unit and the Department of Physical Education and Exercise Science possesses a weight management clinic, exercise testing laboratory, and more. URI's Speech and Hearing Clinic is a state-of-the-art service provider for individuals with speech, language, and hearing problems. While serving the community, it provides training and research opportunities for students. The Department of Chemistry houses laboratories specializing in NMR, analyses of energetic materials, forensic, biological, and separations science, and spectroscopy.

Another important research facility at URI is the University's Electron Microscopy and Imaging Facility, located in the Morrill Life Sciences Building. The EMIF, as it's called, provides teaching and research services in electron microscopy, light microscopy, and digital imaging for a wide variety of scientific disciplines at URI. It has a high resolution JEOL-1200EX scanning/transmission electron microscope equipped for digital image acquisition, a Zeiss EM-900 transmission electron microscope and research-quality light microscopes including a laser scanning confocal microscope. The facility offers services in

transmission, scanning, cryo-transmission electron microscopy, energy dispersive X-ray microanalysis, and light microscopy with digital image acquisition and processing. Services also include sample preparation and technical support in scientific photography. This facility is available to students, staff and faculty for research projects and instruction.

For more information on URI's research facilities, please turn to the section on the college or department you are interested in.

## Research

Since 1907, the University has held the major responsibility within the state for graduate education, which is closely associated with a strong program of research. Research leads to the discovery of knowledge and its dissemination through teaching. Responsibilities for graduate education, embodied in the Graduate School, and the overseeing of research funding in the Research Office are assigned to the Office of Graduate Studies, Research, and Outreach. Research and public service projects are conducted in all departments and programs offering graduate degrees.

URI undergraduates are provided with a unique learning experience by participation in the research activities of Presidential Partnerships, which involve various disciplines and faculty from several departments and colleges. Current partnerships are in the areas of infectious disease control, health promotion, the coastal environment, surface and sensors technology, and family resources.

Research throughout URI is supported by an average of \$49 million per year. Support comes from foundations, commercial firms, federal and state agencies, and the University. The University ranks among the top five percent of the country's colleges and universities in the amount of research funding received.

Applications for research grants are approved by the Vice Provost for Graduate Studies, Research, and Outreach. The Research Office provides assistance to

the University research community in all aspects of research and the preparation of proposals.

In addition to department research, the University has established a number of research, extension, and technology transfer programs in the following areas:

### Children, Families, and Communities

- child development
- family therapy
- family violence
- historic costumes and textiles
- innovative programs in response to the needs of state government
- policy evaluation and analysis for public officials
- research and support activities for the public and human services area
- textile conservation
- urban field research and technical assistance

### Enterprise and Advanced Technology

- advanced sensor-based systems, including robotics
- basic and applied research in filtration and separation processes
- business and economics
- consumer product safety
- distributed computing
- early design analysis for improving product design for ease of manufacturing
- fault-tolerant digital circuits and systems
- high-performance computer processor, memory, and input/output design
- international aspects of business
- labor and industrial relations
- market research
- nanotechnology
- nuclear magnetic resonance spectroscopy
- Pacific basin capital markets information
- pollution prevention and technical assistance for New England industries
- process engineering
- product design
- rapid prototyping for manufacturing
- scientific criminal investigations
- sensors
- signal processing

- telecommunications and information marketing
- textile performance testing
- thin film materials
- water resource research and training

### Health

- anti-infective pharmacology
- biology, ecology, and control of vector-borne diseases
- cancer prevention through behavioral change
- drug delivery and development
- evaluation services and assistance to exercise and athletic programs
- nutrition and food science
- gerontology
- medicinal chemistry
- physical therapy
- speech and hearing testing and diagnosis
- weight management through behavior modification

### Marine and the Environment

- agriculture experimentation and research
- autonomous underwater vehicles (AUVs)
- aquaculture
- atmospheric chemistry studies
- biotechnology
- economic effect of marine policy
- environmental horticulture
- estuarine and coastal pond dynamics
- golf and sports turf management
- management of coastal resources
- marine ecosystems
- marine environmental modeling and monitoring systems
- marine geological sampling and testing
- marine geomechanics
- marine pathology
- nonlinear wave dynamics
- ocean drilling
- ocean instrumentation (forward looking sonar)
- satellite remote sensing for terrestrial, coastal, and near-shore applications
- seabed characterization
- sea floor mapping
- Sea Grant research, education, and marine advisory services
- structural acoustics



- underwater tracking
- use of geographic databases to solve environmental problems
- waves generated by tsunamis

Additional information on these areas of research and expertise at URI can be obtained from the Research Office, 70 Lower College Road.

## Accreditation

The University of Rhode Island is accredited by the New England Association of Schools and Colleges. In addition, certain courses and programs of study have been approved by national accrediting agencies.

The New England Association of Schools and Colleges is a nongovernmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one that has the necessary resources available to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial, but applies to the University as a whole. As such, it is not a guarantee of the quality of every course or program offered, or of the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the University.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the school's administrative staff or the association at 209 Burlington Road, Bedford, MA 01730; 781-271-0022.

The national accrediting agencies that have approved the quality of certain course offerings and programs of study include the American Assembly of Collegiate Schools of Business (AACSB), American Association of Marriage and Family Therapy, American Chemical Society, American College of Nurse-Midwives, American Council on Pharmaceutical Education, American Institute of Certified Planners and Association of Collegiate Schools of Planning, American Dietetic Association, American Library Association, American Physical Therapy Association, American Psychological Association, American Society for Landscape Architects, American Speech-Language-Hearing Association, Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, National Association of Schools of Music, National Association of State Directors of Teacher Education and Certification, National Council for Accreditation for Teacher Education, and the Commission on Collegiate Nursing Education.

The University is also an approved member institution of the American Association of University Women, the American Council on Education, the Council of Graduate Schools, the North American Association of Summer Sessions, the National Association of State Universities and Land-Grant Colleges, the Northeastern Association of Graduate Schools, and the National University Extension Association.

## The University Community

In addition to the student body, the University community is made up of faculty, administration, staff, and alumni. The *Faculty Senate* represents the faculty and is authorized by the general faculty to conduct the business assigned to the faculty by law or by the Board of Governors for Higher Education. The *Graduate Council* is the representative body for the graduate faculty and determines the academic policies for graduate study. The office of *University Ombud* investigates complaints from students, faculty members, and administra-

tive personnel that they have been unfairly dealt with in the normal channels of the administrative process. The ombud is a tenured or emeritus member of the faculty appointed by the Faculty Senate and is assisted by a student appointed by the President.

The *Instructional Development Program* (IDP) exists to help faculty members in their teaching responsibilities. Faculty members who want to increase their teaching effectiveness by improving their skills or developing new ones may work individually with IDP staff and participate in various workshops, colloquiums, and seminars on teaching.

The voices of alumni are heard through the *Alumni Association*. The Alumni Relations Office recognizes all those who have attended the University for two semesters or more and whose class has graduated. URI has more than 80,000 alumni throughout the world. The Alumni Relations Office promotes the interests of the University and helps keep alumni in touch with their alma mater. Through its office in Davis Hall and its network of chapters and affinity groups throughout the country, the Alumni Relations Office maintains ties with URI alumni through services, programs, special events, and the magazine *QUAD ANGLES*. An annual membership drive program provides funds for reunions, Homecoming, special events, Alumni Excellence Awards, Student Alumni Association, alumni publications, and other University projects. The annual Winter Gala, Alumni Golf Tournament, and Annual Fund Drive provide scholarship and other University aid.

The University receives less than 25 percent of its support from the state. The balance comes from student fees and tuition, federal grants, and auxiliary enterprises and other miscellaneous sources. The *University of Rhode Island Foundation* encourages and administers gifts from private sources to build a substantial endowment for continuing support of the University. It is concerned with the support of University activities for which adequate provision is not ordinarily made by appropriations from public funds.

**Academic and Social Codes.** Each student is a member of the University community, with all the rights, privileges, and responsibilities that go with such membership. The rights and privileges include full use of the educational opportunities and facilities offered on campus. The responsibilities include those of making proper use of these facilities in order to progress educationally, respecting the rights of others, and knowing and obeying the rules and regulations developed by the University community for the good of the total membership.

The University expects that all course papers, theses, and dissertations will be prepared, and all examinations taken, in conformance with accepted standards of academic integrity. This includes the proper citation and attribution of all material that is not the original product of the writer. It is the student's responsibility to determine the appropriate style used in his or her discipline for presentation of material derived from other sources and to adhere to it scrupulously in all written presentations. (See "Cornerstones," at right.)

In addition, each student's University ID Card must be carried at all times on campus and presented upon request. Use of the card constitutes acceptance of all applicable terms and conditions. This card will remain the property of URI. Lost, stolen, or damaged cards must be reported immediately to the Campus Access Office (Room 216, Memorial Union).

**Affirmative Action and Nondiscrimination.** The University of Rhode Island prohibits discrimination on the basis of race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and discrimination against disabled and Vietnam era veterans in the recruitment, admission, or treatment of students, the recruitment, hiring, or treatment of faculty and staff, and the operation of its activities and programs. This is in compliance with state and federal laws, including Titles VI and VII of the Civil Rights Act of 1964, as amended, Title IX of the 1972 Education Amendments to the Higher Education Act, Executive Order 11246, as amended, Sec-

tions 503/504 of the Rehabilitation Act of 1973, as amended, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974, the Americans with Disabilities Act of 1990, the Civil Rights Act of 1991, the Persian Gulf Benefits Act of 1991, Rhode Island General Law 28-5.1, as amended, Executive Order 95-11, and Executive Order 92-2.

The administrators of Admissions, Student Financial Aid, Graduate School, Career Services, Counseling Center, and Special Programs for Talent Development cooperate to provide information and guidance for economically and socially disadvantaged individuals seeking opportunities for study at the University. Inquiries may be directed to any of these offices.

With regard to scholarships and commissioning into the armed forces, the ROTC program, in accordance with Department of Defense policy, does not comply with the University's policy on nondiscrimination based on sexual orientation.

Most buildings on campus are architecturally available to the disabled, and provision is made to ensure that no student is prevented from pursuing a course of study because of restricted access to buildings.

AIDS is one of the most tragic, life-threatening epidemics of modern times. Students, faculty, and staff at the University of Rhode Island must provide the compassion, understanding, and support necessary to help individuals with AIDS and HIV infection. As part of this responsibility, the University will vigorously enforce individual rights of confidentiality and freedom from discrimination. The rights of individuals with AIDS are covered under three University policies based on Section 504 of the Rehabilitation Act of 1973: "Reasonable Accommodation for Handicapped Employees," "Life-Threatening Illness," and "Handicapped Policy." Copies of these policies are available at the Office of Human Resource Administration, Health Services, and the Disability Services office in the Memorial Union.

Inquiries concerning compliance with antidiscrimination laws should be addressed to Robert Gillis, Director of Affir-

mative Action, Equal Opportunity and Diversity, Suite 201, Carloti Administration Building, 401-874-2442. Questions regarding provisions for students with disabilities should be directed to the director of Disability Services in the Office of Student Life, 330 Memorial Union, 401-874-2098 (TT via R.I. Relay, 1-800-745-5555).

## Notice of Change

Rules, regulations, dates, tuition, fees, the availability and titles of programs and areas of specialization, their administrative location, and courses set forth in this catalog are subject to change without notice. Where a change in program requirements is made while a student is enrolled, the student may elect to complete the program under the requirements in effect at the time of matriculation or to shift entirely to the new requirements, but may not choose parts of each set. As a result of the ongoing reviews of all programs, certain offerings and specializations may be deleted or restructured between editions of this Catalog.

### URI CORNERSTONES

The University of Rhode Island is a principled community guided by values. As members of this community, we subscribe to the following principles which form the foundation of our endeavors.

- we pursue knowledge with honesty, integrity, and courage.
- we promote independent choice, intellectual curiosity, open-mindedness, and free expression.
- we respect the rights and dignity of each individual and group.
- we reject prejudice and intolerance, and we work to understand differences.
- we accept personal responsibility for our actions and their consequences.
- we actively cooperate to improve the University, the state of Rhode Island, and the global community beyond our borders.
- we strive to be a community where the environment and property are treated respectfully.
- we seek to create and maintain an environment conducive to personal health and wellness.
- we work to develop skills which promote lifelong learning, leadership, and service.

*Developed by the Quality of Student Life Committee  
and endorsed by the URI Student Senate.*

# STUDENT LIFE AND SERVICES

An enriching college life includes a well-balanced mix of academic and extracurricular activities. The University offers a unique blend of student organizations and activities with an emphasis on student-run services and businesses.



*While much of the information provided here applies primarily to students at the Kingston Campus, you can find more information on offerings at URI's Providence Campus on pages 17 and 73 of this catalog, by visiting [www.uri.edu/prov/](http://www.uri.edu/prov/), or by visiting Room 125 at the Providence Campus.*

## Undergraduate Orientation

Orientation programs that facilitate students' entry into the campus community are administered by University College. New students are charged a fee to cover expenses associated with their orientation program such as room, meals, and materials.

**Summer Orientation Workshops.** All undergraduate students who are beginning University careers are encouraged to attend a two-day workshop to plan their

academic programs, register for fall classes, learn about URI, and begin to acquire the skills essential for successful transition from high school and home to the University community. These programs are planned to personalize the student's first experience with the University as each one participates, with a group of approximately 15 classmates, in workshop projects. Admitted students begin receiving registration materials in April.

Special programs are planned for families of new students to coincide with the workshop dates.

**Transfer Orientation Programs.** Transfer orientation is optional, but undergraduate students transferring to the University from another institution with 24 credits or less are encouraged to attend the full summer orientation program. Those with 24 credits or more who are admitted into University

College, rather than any of the academic colleges, are invited to attend Transfer Orientation. This full-day program is presented during summer orientation. The workshop is designed to acquaint transfer students with some of the unique features and procedures of the University.

## Orientation for International Students.

Programs held at the beginning of the academic year offer assistance with immigration regulations, registration, financial problems, housing, banking, and social and cultural differences. Staff are on hand to help students adjust to life in the United States and to the University.

## Lifestyles

**Undergraduate Housing.** Residence halls and boarding facilities are available to URI students during the regular academic year and during summer sessions. Some students prefer the option of living in a fraternity or sorority or off campus. Because of the ongoing residence hall renovation project, on-campus housing for incoming transfer students is extremely limited.

**Residence Halls and Dining Centers.** There are 20 residence halls on campus offering a variety of living accommodations including coeducational housing, one all-female hall, an honors community, an engineering community, a wellness hall, and a hall for first-year students. Priority consideration for residence hall assignments will be given to returning students who have submitted a housing application fee by the posted deadline. A notice will be forwarded to all residence hall students during the spring semester to inform them of the deadline and the housing application procedure. After returning students have been assigned, first-year students who have paid their housing application fee by May 1 will be given priority consideration for the remaining spaces. All other students will be assigned on a space-available basis. Assignments of incoming students are

made in the order in which their housing application fees are received. Every effort is made to honor roommate requests. For rates and contracts, see page 21.

Applications for residence hall living can be obtained from the Department of Housing and Residential Life, Roger Williams Building. Phone: 401-874-4151.

For students' convenience, URI offers three dining centers, two cash restaurants, a cyber café, library coffee cart, convenience store, bakery, and a warehouse shopping center with a wide variety of food items. These facilities were constructed with bond funds. In order to guarantee repayment of these bonds, the University requires that all students living in residence halls choose from a selection of available meal plans.

Each URI student also has the opportunity to obtain a Ram Card account, which is an optional debit card account accessed through their student ID card. Students who participate in the program have the ability to purchase food and supplies from various on- and off-campus merchants. Unused dollars in the Ram Account transfer from semester to semester until graduation.

*Fraternities and Sororities.* About 1,000 students participate in URI's fraternity-sorority system, which sponsors 13 houses designed for congenial small-group living. The Office of Campus Life advises these groups. The Greek houses promote scholarship, citizenship, and small-group living. Purchasing and business management for these houses is provided by a private corporation controlled by the fraternity and sorority members.

**Graduate Housing.** Interested students should contact URI's Department of Housing and Residential Life for information, at 401-874-2215.

**Commuting.** URI typically has two kinds of commuters: those who live "down the line" and those who live "at home." There are usually about 6,000 undergraduate students commuting daily to classes here. There are a variety of services available on campus for them. Dining Services offers

special meal plans for commuters, and the Commuter Housing Office provides resources and information. Commuters have access to campus computer labs, to Health Services, and to other campus resources.

To get a parking pass, all car-commuters must bring their student ID and car registration to the Police and Security Department on Upper College Road. Beginning fall 2002, all students will be charged a fee for parking passes.

If you need bus and train schedules or carpool information, visit the Memorial Union Information Desk or Commuter Housing Office.

The Commuter Lounge and Commuter Housing Office are located on the third floor of the Memorial Union. The office provides rental and roommate listings for URI students, faculty and staff, as well as assistance with landlord/tenant legal questions, general campus information, and an online listings of properties. The Campus Housing Office also coordinates a spring Off-Campus Housing Fair, and other publications and information.

For more information, contact URI Commuter Housing, 302C Memorial Union, call 401-874-2828, e-mail [CHO@etal.uri.edu](mailto:CHO@etal.uri.edu), or visit [www.uri.edu/commuter\\_housing/](http://www.uri.edu/commuter_housing/).

*Commuting from "Down-the-Line."*

A number of students live in houses or apartments in the southern Rhode Island area known as "down-the-line." Juniors and seniors as well as graduate students often choose to live off campus within a 10- to 15-mile radius of the University where summer homes are rented to students for the school year. Typically, a student will pay \$300–600 a month, plus utilities, for each bedroom in a furnished house. Supermarkets, laundries, restaurants, shopping centers, and recreational facilities are nearby.

Since most of these rentals are five miles or more from campus, students without cars should investigate the availability of public transportation. A local bus service connects the shopping and service areas in Wakefield with the University. Some of the

outlying resort areas, including Narragansett Pier, Galilee, and Scarborough, are also included in the bus routes. Bus service is also available to the Amtrak railroad station and Green Airport, and to Newport and Providence.

The Commuter Housing Office provides a computerized listing of nearby rooms, apartments, and houses available to students. They also offer a roommate matching service and assist students with information on landlord-tenant issues.

**Independent Students.** Over 1,000 undergraduate students on the Kingston Campus are over 25 years old. The Independent Student Organization (ISO) was formed for these men and women, who are pursuing their degrees now for a variety of reasons. The ISO plans social and educational programs. Independent Student Services in the Office of Student Life also lends individual support and answers questions for this population of students. Call 401-874-2101 for more information.

**Women Students.** Women students make up more than half of URI's total student population. A Women's Center, administered by the Office of Student Life, provides the necessary resources to help create an environment rich in role models and free of sexual inequities. In addition, it coordinates lectures, programs, and activities of special interest to women, including Women's History Month, brown bag lunches, internships, and workshops. The Women's Center is moving to a new location for the 2002–2003 academic year at 22 Upper College Road and will include a residential component for Women in Science and Technology as well as a Violence Prevention Program. Phone: 401-874-2097.

**Multicultural Students.** Approximately 800 students use a variety of services for multicultural students at URI. African-American, Native American, Asian, Latin-American, Cape Verdean, Haitian, Muslim, and gay students have formed special-interest groups to further meet their needs. The Multicultural Student Center, located

near the Memorial Union, serves as a gathering place for leisure, meetings, workshops, and various activities. Counseling, programming, and other services are provided by the staff of Multicultural Student Services (401-874-2851).

Bi- and multilingual students can further develop academic English skills through programs offered by the English Language Studies program (401-874-4686).

**Talent Development.** URI also offers Special Programs for Talent Development, a program of special interest to many minority and disadvantaged students. Talent Development was started in 1968 to help young people who otherwise could not attend the University. "TD" provides a special opportunity for minorities and disadvantaged persons.

Talent Development at URI includes a spring Saturday PREP Program and an intense six-week academic summer experience on the Kingston campus, which many TD students mark as a turning point in their lives. If completed successfully, students arrive in Kingston in September as a URI student and a member of Talent Development. URI provides TD students with special academic advising, unlimited individual tutoring, financial aid based on need, and a strong support community.

Any Rhode Island resident who meets URI's core requirements may apply for Talent Development. Specifically, the program looks for minority and/or disadvantaged students who, without TD and its support services, could not expect to be admitted to URI. Even those who finished high school a while ago, or have a GED, may still be eligible for Talent Development.

To find out more about Talent Development at URI or to get an application, ask your guidance counselor, call 401-874-2901, e-mail [tdinfo@etal.uri.edu](mailto:tdinfo@etal.uri.edu), or visit [www.uri.edu:80/talent\\_development/](http://www.uri.edu:80/talent_development/). Page 31 also has more information on the program.

**International Students.** Approximately 500 international undergraduate students, graduate students, visiting scholars, faculty, and their dependents are advised and served by the Office of International Students and Scholars, located at 37 Lower College Road. Assistance is provided in the social, personal, financial, housing, and immigration areas. All communications from international faculty and scholars concerning nonimmigrant visas are also handled by this office. An orientation program for graduate students is scheduled prior to the beginning of the fall semester. A number of national student organizations provides students with the opportunity to participate in cultural activities, and the University's International Center serves as a meeting place for study, social events, and other activities. Phone: 401-874-2395. E-mail: [issoff@etal.uri.edu](mailto:issoff@etal.uri.edu). Web site: [www.uri.edu/iss/](http://www.uri.edu/iss/). URI's English Language Studies Program also offers programs to help international students further develop academic English skills; call 401-874-4686.

**International Teaching Assistants.** The International Teaching Assistant (ITA) Program offers resources and support for international graduate students who serve as teaching assistants. Oral proficiency testing, using the SPEAK test, is offered each semester to allow them to demonstrate their competence in spoken English. ITAs can also enroll in ELS 512 and 612, courses specially designed to prepare them for their teaching roles. If interested, contact the ITA coordinator in the English Language Studies Program, Independence Hall, 401-874-4686.

**Disability Services for Students.** The URI community encourages contributions to the learning environment from members of all its cultures, including students with disabilities. The office of Disability Services for Students recognizes disability as cultural diversity and fosters an inclusive environment for all in the University community through education, awareness, and accessibility.

We accomplish this mission by:

- recommending and coordinating reasonable accommodations in a variety of domains (exam, course, program, housing, transportation),
- encouraging development through self-advocacy and personal decision making,
- supporting a commitment to academic success,
- providing training and information to faculty and administration that uphold the inclusion of persons with disabilities.

Individuals who wish to discuss program and course accommodations and/or adaptive technology may contact the director of Disability Services in the Office of Student Life, 330 Memorial Union. Phone: 401-874-2098 (V/TT; R.I. Relay, 1-800-745-5555).

For more information on disability services at URI, visit [www.uri.edu/disability\\_services](http://www.uri.edu/disability_services).

## Student Government

**Undergraduate.** The *Student Senate* is a legislative body that represents the undergraduate students to the administration and faculty. It oversees student organizations, and provides funding for them by distributing a portion of the Student Services fee. The Senate Office is located in the Memorial Union, phone: 401-874-2261. URI's Interfraternity Council supervises fraternity affairs and the Panhellenic Association governs sorority life.

**Graduate.** The *Graduate Student Association (GSA)* is a government body maintained by and for the graduate students of the University with the purpose of enhancing the academic, intellectual, and social opportunities of its members. Officers and members of the GSA Senate, which are elected annually from the entire graduate student body, distribute GSA funds and represent the graduate students to the University. The association has members on the Graduate Council. GSA offices are located in the Memorial Union, phone: 401-874-2339, e-mail: [gsa@etal.uri.edu](mailto:gsa@etal.uri.edu).

## Student Discipline

Administered by the Office of Student Life, the University Student Discipline System is designed to promote student growth and to preserve the atmosphere of learning necessary to the well-being of all students. Community standards of behavior and University policies for students are published in the *Student Handbook*. The Student Discipline System receives complaints or allegations from aggrieved parties, the available facts are gathered and evaluated, and the case may be referred for formal administrative action or a hearing. Sanctions range from "no further action" to suspension or dismissal from the University and may include education, counseling, fines, or other conditions relating to the nature of the violation.

## Student Services

**Career Services.** Offering both "high tech" and "high touch" approaches, Career Services assists URI undergraduates, seniors, grad students, and alumni in assessing their career goals, developing job search and decision making skills, and implementing career objectives. Career Services works with over 2,000 active employers from all geographic locations seeking interns, summer employees, part-time workers, and full-time job candidates. Professional staff collaborates closely with faculty in all academic disciplines to prepare students for employment.

BEACON ("Become Employed at Career Online Network") is a "24/7" state-of-the-art recruiting program powered by MonsterTRAK.com, the college-specific site of Monster.com. Accessed at <http://career.uri.edu>, the Career Services website, this secure system allows students and registered alumni to search and apply for jobs and internships, apply for on-campus interviews, have their resumes forwarded to employers, and access mentors through the BEACON Career Contact and Alumni Mentor program.

A full range of career development, planning and placement services is provided to students from their first year at URI. A staff of professionally trained career counselors with advanced degrees in the field provides one-to-one confidential career assessment, testing, and advising. During the academic year, students may use walk-in quick question hours for resume critiques and other immediate concerns.

Job fairs are held in both fall and spring and are open to all. Specialty job fairs attract specific students and alumni. These include summer, internship and co-op job fairs; engineering and technology job fair; human services, government and non-profit job fair; nursing and pharmacy job fairs; teacher job fair; and the last-chance all-major job fair. In addition, a graduate school expo is held in the fall.

URI Career Services also assists students whose goal is graduate or professional school. Career professionals review graduate school essays, assist in graduate school research, and advise concerning job search and interview techniques. In addition, job listings include fellowships, graduate internships and research opportunities.

The Career Resource Center houses print and multimedia materials, including self-assessment tools, company information, and an internship corner offering both print and web-based access to opportunities. Working collaboratively with the Office of Internships, Career Services is a clearinghouse for all internships, including academic credit bearing internships posted on BEACON and supervised through the Office of Internships.

Open year-round. For more information and hours, visit the Career Services website at <http://career.uri.edu>, call 401-874-2311, or e-mail [career@etal.uri.edu](mailto:career@etal.uri.edu).

**Counseling.** The Counseling Center, located in Room 217, Roosevelt Hall, is staffed by professional counselors, psychologists, and social workers. It offers short-term individual counseling and a variety of skill-building and support groups to help undergraduate and graduate stu-

dents cope successfully with demands. The Counseling Center provides assistance to students in areas such as adjusting to college life, coping with stress, building satisfying relationships, and developing more self-esteem. Information shared in counseling is confidential.

The Counseling Center also administers professional examinations such as the Miller Analogies Test, the Graduate Record Examinations, the Law School Admissions Test, the Medical College Admission Test, the National Teacher Examinations, and others. The Center offers preparation courses for many of these tests. Phone: 401-874-2288.

**University Chaplains.** The University chaplains are active in providing religious services and in counseling, advising campus groups, teaching, and programming. The chaplains are available to all students, staff, and faculty on a 24-hour basis. The chaplains represent the Roman Catholic, Jewish, and Protestant communities; referrals are available to representatives of other faiths.

**Memorial Union.** The center for campus activities, the Memorial Union houses a wide variety of educational, social, cultural, and recreational services and facilities for both undergraduate and graduate students. These include meeting and conference rooms, lounges, study rooms, darkroom, radio station, campus newspaper offices, games room, offices for student organizations, scheduling and information office, ballroom, optical shop, flower shop, convenience store, cafeteria, restaurant, pizza shop, and a coffee and pastry shop.

Among the services provided are a travel agency, unisex hair salon, credit union, copy center, bookstore, computer store, computer lab, 193° Coffeehouse, and the Memorial Union Technical Productions (which offers technical services in sound and lighting).

An undergraduate student board of directors works with the director and staff of the Memorial Union/Student Involvement Office to determine policy for the Union and plan a full program of social, cultural, intellectual, and recreational activities.

**Health Services.** Located in the Potter Building, adjacent to the residence halls, Dr. Pauline B. Wood Health Services provides primary ambulatory care to students. Nurse practitioners and physicians see students by appointment Monday through Friday from 9 a.m. to 8 p.m. in the general medicine and women's clinics with laboratory, radiology, and pharmacy services available. Limited nursing, physician, and pharmacy services are available on Saturdays, Sundays, and most holidays from 10 a.m. to 6 p.m.

Specialists in orthopedics, surgery, internal medicine, dermatology, gynecology, and psychiatry hold regular clinics at the Potter Building. Allergy injections are given, provided the vaccines are supplied by the student. A travel/immunization clinic administers vaccines available from the pharmacy. The cost of care given in the Potter Building is paid through the mandatory health services fee, supplemented by insurance reimbursement or direct billing for laboratory and radiology and a partial co-payment for pharmacy.

Hospital care is available in the local community, as is referral to specialists. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Therefore, students are required to have adequate accident/sickness or health insurance. Students who choose a private physician assume responsibility for expenses incurred. See "Accident/Sickness Insurance" on page 20 for additional details or consult the Health Services brochure, "To Your Health."

Health educators provide a variety of services to promote and enhance personal health and well-being. Information on how to achieve a healthy lifestyle is provided through wellness clinics, outreach activities, awareness days, and dynamic peer education program workshops. A registered dietitian is available for nutrition education and counseling.

An emergency medical service staffed by student volunteer EMTs responds to campus emergency medical calls 24 hours a day and transports patients to Health Services or the South County Hospital emergency room.

**Learning Assistance Center.** The Learning Assistance Center, located in the basement of Roosevelt Hall, helps students improve their study techniques. Services are offered to students on an individual basis, in group workshops, and through peer tutoring. Individual sessions and workshops cover a range of topics including time management, strategies for improving reading and memory, test anxiety, and systems for taking notes. Peer tutoring in high-risk courses is offered at regularly scheduled times throughout the semester. The services of the center are offered primarily to undergraduates, but graduate students often rely on the center to renew former skills and for other forms of assistance. Phone: 401-874-2367.

**Writing Center.** The Writing Center provides free tutorial assistance to anyone in the University community wanting feedback on any kind of college or extracurricular writing. The Writing Center staff works with writers from all disciplines in the University, with all levels of expertise, through all stages of their writing processes. Tutors (mostly English department faculty and graduate students) work with students, either one-to-one or in group sessions, on the particular writing projects students bring to the table. Sessions may focus on any of the following: brainstorming for ideas, paragraphing, sharpening thesis statements, documenting sources, organizing, enhancing clarity, using appropriate evidence, or practicing and internalizing specific grammatical concepts.

The Writing Center helps students become better writers by working individually to develop strategies which can later be applied to other writing situations. Tutorials are limited to 30 minutes per session, but students are encouraged to return for more visits at several points for each project. In addition to the tutorials, the Writing Center also houses computers for composing and web research, multidisciplinary reference books, syllabi for writing-intensive courses from many departments, and group work areas.

Although appointments are encouraged, walk-in sessions may be available. The center is open about 40 hours a week, with both day and evening hours. For more information, call the Writing Center at 401-874-4690, stop by Room 313, Independence Hall (look for the green door), or check the Web ([www.uri.edu/artsci/eng/wrtcnt.html](http://www.uri.edu/artsci/eng/wrtcnt.html)).

## Student Involvement

**Student Programs and Organizations.** Social, recreational, cultural arts, and co-educational programs are sponsored by many different offices and student organizations at the University. These events are funded by student fees, and opportunities abound for students to become involved in selecting and coordinating them. The Student Entertainment Committee sponsors an extensive series of social programs featuring concerts, local and regional musicians, other live entertainment, lectures, and films.

Over 90 student organizations exist in which students can get involved. Covering a wide range, these organizations may be social, political, academic, or media-related; several represent special-interest groups. Thousands of students participate in the activities coordinated by these organizations. For information, students are directed to Room 210 in the Memorial Union.

**Office of Student Involvement and Experiential Learning.** Staff members in the Office of Student Involvement and Experiential Learning create special programs and workshops that foster student involvement and offer academic opportunities outside the classroom. They advise student organizations in all areas of group dynamics, leadership, personal growth and development, and program planning. In addition, they coordinate Ram Tour weekend bus trips, free film premieres, and the annual A. Robert Rainville Student Leadership banquet.

**Center for Student Leadership Development.** The Center for Student Leadership Development offers for-credit classes, internships/teaching assistant positions, workshops, conferences, and programs designed to enhance students' leadership skills. The credit classes count toward the academic minor in leadership. Other academic opportunities include individually designed internships and the Peer Leaders for FLITE and Modern Leadership Issues classes. Popular programs and conferences include the First-Year Leadership Institute, the Outdoor Adventure Series, the Activism Training Series, and the Real World Leadership Conference. In addition, leadership and group development consulting services are available to student organizations. For more information, visit the Memorial Union, Room 210.

**Student-Run Businesses.** The Memorial Union offers students a number of opportunities to run businesses under full-time supervision but with a large amount of independence. Enterprises such as the flower shop, Memorial Union Technical Productions (sound and lighting), and the 193° Coffee House allow for management training and excellent work experience.

**Athletics and Recreation.** The Department of Athletics is committed to providing athletics and recreational opportunities to students, staff, and alumni. The department seeks to complement the University's academic goals by enhancing physical, emotional, and social well-being through leisure activities and lifetime involvement in sports.

The emphasis of the program is to provide opportunities that encourage the pursuit of lifetime activities, a sense of commitment and teamwork, and the development of personal character while maintaining an environment that values cultural diversity and gender equity among its student athletes and department staff. Men's intercollegiate teams participate in Division I-AA football and Division I baseball, basketball, cross-country, golf, soccer, swimming and diving, tennis, and indoor and outdoor track and field. Women's in-

tercollegiate teams participate in Division I basketball, cross-country, field hockey, gymnastics, rowing, soccer, softball, volleyball, indoor and outdoor track and field, swimming and diving, and tennis.

Competitive club sport teams include equestrian, ice hockey, lacrosse, roller hockey, men's rowing, rugby, sailing, skiing, synchronized swimming, ultimate Frisbee, men's volleyball, water polo, and wrestling. The Intramural Sports Program also offers badminton, basketball, beach volleyball, billiards, bowling, flag football, floor hockey, golf, indoor soccer, outdoor soccer, softball, tennis, and volleyball throughout the year for all-male, all-female, and coed teams. In addition to membership in the Atlantic 10 Conference, the University holds membership in the Atlantic 10 Football Conference, NCAA, ECAC, and the New England Intercollegiate Athletic Association.

Opening in 2002, the 8,000-seat Ryan Center is the cornerstone of URI's athletic complex and will serve as the home of Rhode Island men's and women's basketball. Located adjacent to Meade Stadium, the \$54 million facility gives Rhode Island one of the finest facilities in the nation. The 200,000-square foot arena combines the heart and spirit of venerable Keaney Gym with the amenities, services, and conveniences of a modern arena. In addition, a \$12 million ice skating facility is slated to open this year, which will be open for public skating.

The University has a number of other facilities for athletics and recreation. Mackal Field House contains two fitness rooms complete with weight training equipment, Lifecycles, stair climbers and rowing machines, a 200-meter track, four basketball courts, and a gymnastics training center. Mackal also houses the athletic department's administrative offices.

The 5,810-seat Meade Stadium opened in 1928 and underwent major renovations in 1980. Opened in 1953, 3,385-seat Keaney Gym is the site of Ram volleyball matches. Keaney was the home of the men's and women's basketball teams for

49 seasons. Tootell Physical Education Complex offers an aquatic center with competitive, instructional classes; two varsity team weight rooms; a dance studio; and East and West Gyms, available for basketball, volleyball, and badminton.

Complete with a new scoreboard and dugouts, Bill Beck Field is the home of the URI baseball team. The playing surface has been upgraded and is one of the top baseball facilities in the Atlantic 10 Conference. Other athletic facilities at URI include a lighted soccer field, field hockey field, 12 tennis courts, softball field, two beach volleyball courts, and practice fields.

**Honor Societies.** The University has chapters of a number of national honor societies, election to which is a recognition of accomplishment. The Society of the Sigma Xi is the scientific honor society, Phi Beta Kappa is a national liberal arts honor society, Phi Eta Sigma is a national honor society for freshmen, and Phi Kappa Phi and the Golden Key are national honor societies for general scholarship. More specialized honor societies include: Alpha Sigma Lambda (continuing education), Alpha Kappa Delta (sociology), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Beta Phi Mu (Beta Iota chapter, library science), Chi Epsilon (civil engineering national honor society), Delta Pi Epsilon (business education), Dobro Slovo (Slavic), Epsilon Rho (continuing higher education), Eta Kappa Nu (electrical engineering), Financial Management Association (URI chapter, finance), Gamma Kappa Alpha (Italian), Kappa Delta Pi (education), Kappa Omicron Nu (O Alpha Mu chapter, family and consumer studies), Kappa Psi (pharmacy), Lambda Kappa Sigma (women's pharmacy), Lambda Pi Eta (Beta Gamma chapter, communication studies), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Order of Omega (fraternity/sorority), Phi Alpha Theta (history), Pi Kappa Lambda (Zeta Epsilon chapter, music), Phi Sigma Iota (foreign languages, literature, and linguistics), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (Gamma Epsilon,



political science), Pi Tau Sigma (mechanical engineering), Psi Chi (psychology), Rho Chi (pharmacy), Sigma Delta Pi (Spanish), Sigma Iota Epsilon (management), Sigma Phi Alpha (dental hygiene), Sigma Pi Sigma (physics), Sigma Theta Tau (nursing), and Tau Beta Pi (engineering).

**Other Organizations.** In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for participation in any one of these. The University Theatre, under the direction of the Theatre Department, presents several plays each year. The URI Debate Council is directed by members of the Department of Communication Studies and participates in intercollegiate debates. Cheerleaders are active at varsity football and basketball games and other special events and rallies.

There are about 30 professional organizations on campus related to academic areas, and a number of groups serving social, recreational, cultural, religious, and political interests.

Students publish a newspaper four times a week, a monthly literary magazine, a monthly publication of political and social commentary, and a yearbook. Radio station WRIU, with local AM and FM reception that reaches all of Rhode Island and parts of Connecticut and Massachusetts, is student-run and operates 365 days a year. There is also a 24-hour student-run ambulance service.

## Parent Involvement

The Parents Council helps parents establish a relationship with the University and offers opportunities to support URI admissions, fund-raising, career services, Orientation, and Family Weekend. In addition, the URI Parents Fund provides unrestricted funding for academic, social, and cultural programs for URI students and their families. For more information, please call Sarah Nielson at 401-874-4852, e-mail [snielson@advance.uri.edu](mailto:snielson@advance.uri.edu), or visit [www.advance.uri.edu/fundraising/parents council/](http://www.advance.uri.edu/fundraising/parents council/).

## Providence Campus

While the University's ASFCCE students can avail themselves of all that's available in Kingston, they also find a range of unique services and offerings at the campus in Providence, from a bookstore and library to peer counseling and a student lounge. The Alan Shawn Feinstein College of Continuing Education is dedicated to fulfilling the unique needs of adult students. Students at the Providence Campus enjoy a Child Development Center, and evening and Saturday services. There is also has an Academic Skills Center, Testing Services and a LEAP program (Learning Enhancement for Adults Program), which helps students build confidence and skills in math, reading and writing. Students may also qualify for scholarships offered exclusively to ASFCCE enrollees. For more information on the range of activities and services at the University's Providence Campus, turn to page 73 or visit ASFCCE Student Services (Room 125 of the Shepard Building).

## Confidentiality of Records

Procedures for the release and disclosure of student records maintained by the University of Rhode Island are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great importance and that as much information in a student's file as possible should be disclosed to the student on request. A current or former student has the right to inspect and review official records, files, and data directly related to that student. This right does not extend to applicants, those denied admission to the University, or those who were admitted but did not enroll. Some records are not available to students.

Third parties do not have access to personally identifiable records or information pertaining to a student without the written consent of the student who specifies that the records be released. Parents and spouses are considered third parties. However, a change in the law permits the University to notify the parents or guardian of a student under 21 years of age about an alcohol or other drug violation.

Detailed guidelines for the release and disclosure of information from the student records are available from the Office of Student Life. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974, as amended.

# ENROLLMENT SERVICES



This section discusses the University's fees, expenses, financial aid, and registration for students.

Tuition fees, and policies set forth in this catalog are subject to change without notice. All charges are billed by the semester and are due and payable upon receipt of the bill or by the due date indicated on the bill.

The amount of tuition and fees varies depending on whether the student is matriculated or nonmatriculated, whether the student is enrolled in full- or part-time study, whether the student is a legal resident of the state of Rhode Island, and by course sponsorship.

**Matriculated and Nonmatriculated Students.** All students who are seeking an undergraduate degree at the University must be admitted to *matriculated* status by Undergraduate Admissions. Students who have received their baccalaureate and who wish to earn a graduate degree at the University must be admitted by the Graduate School as *matriculated* students. Persons who wish to enroll for courses at the University but are not interested in pursuing a degree must register as *nonmatriculated* students. See the Undergraduate and Graduate admissions sections for application procedures.

**Full-Time and Part-Time Students.** Matriculated undergraduate students enrolled in 12 or more credits per semester are considered *full-time students*. Matriculated graduate students enrolled in nine or more credits per semester and teaching and research assistants are also considered *full-time students*.

Matriculated undergraduate students enrolled in 1 to 11 credits are considered *part-time students*. Matriculated graduate students enrolled in 1 to 8 credits who are not teaching/research assistants are also considered *part-time students*.

**Resident, Nonresident, and Regional Students.** A student who is a *resident* of the state of Rhode Island pays the in-state fee, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a *non-resident* and pays the out-of-state fee.

A minor student's parents or legal guardians must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration, in order for that student to claim resident student status. A nonresident student who reaches 18 years of age while a student does not, by virtue of that fact alone, become a resident student.

An "emancipated student" must establish the same bona fide residency for in-state tuition exemption. An emancipated student is one who has attained the age of 18, and whose parents have entirely surrendered the right to the care, custody, and earnings of the student and have not claimed the student as a dependent for tax purposes for two years. If any of these conditions is not met, he or she is presumed to be an unemancipated student.

A member of the armed forces (on active duty) or his or her spouse stationed in the state on military orders shall be entitled to classification as a resident student during any semester, the first class day of which is encompassed by the orders.

Undergraduate students are classified as resident or nonresident by the dean of admissions, graduate students by the dean of the Graduate School. A student may appeal the decision to the Board of Residency Review. The preceding information is a summary of the regulations governing student classifications for tuition purposes. The complete text of the regulations adopted by the Board of Governors for Higher Education can be obtained from the Office of Admissions and the Graduate School Office.

A Certificate of Residence is included in the graduate self-managed application package.

*Regional status* is granted to students enrolled in the New England Regional Student Program, whereby students from other New England states may enroll in designated programs at URI that are not offered in their own states (see page 31).

**Course Sponsorship.** Courses offered through the University's Kingston campus are considered Kingston-sponsored (except those offered at night). ASFCCE-sponsored courses are those courses offered through the Alan Shawn Feinstein College of Continuing Education at Kingston, Providence, and satellite locations.

**Matriculated Full-Time Students****Tuition Per Year***Undergraduate (ASFCCE and Kingston)*

Rhode Island residents	\$3,864
Out-of-state residents	13,334
Regional students	5,796

*Graduate (ASFCCE and Kingston)*

Rhode Island residents	\$4,054
Out-of-state residents	11,624
Regional students	6,082

**Mandatory Fees Per Year**

(1) Full-time undergraduate students enrolled in *seven or more Kingston-sponsored credits*, graduate students enrolled in *five or more Kingston-sponsored credits*, and graduate teaching and research assistants:

*Undergraduate*

Registration Fee	\$40
Student Health Services Fee	444
Student Services Fee	1,505
Accident/Sickness Insurance (may be waived)	960
<b>TOTAL</b>	<b>\$2,949</b>

*Graduate*

Registration Fee	\$40
Student Health Services Fee	444
Student Services Fee	1,282
Accident/Sickness Insurance (may be waived)	960
<b>TOTAL</b>	<b>\$2,726</b>

(2) Full-time undergraduate students enrolled in *less than seven Kingston-sponsored credits* and graduate students enrolled in *less than five Kingston-sponsored credits*, who are not teaching or research assistants:

*Undergraduates and Graduates*

Registration Fee	\$40
ASFCCE Activity Fee	40
Arts & Culture Fee	72
Library/Computing Fee	114
<b>TOTAL</b>	<b>\$266</b>

**Matriculated Part-Time Students****Tuition Per Credit***Undergraduate (ASFCCE and Kingston)*

Rhode Island residents	\$161
Out-of-state residents	556
Regional students	242

*Graduate (ASFCCE and Kingston)*

Rhode Island residents	\$225
Out-of-state residents	646
Regional students	338

**Mandatory Fees Per Semester**

(1) Part-time undergraduate and graduate students enrolled in *only Kingston-sponsored courses*:

Registration Fee	\$20
Activity Fee (undergraduate students only)	23
Graduate Tax (graduate students only)	5
Student Services Fee	\$59 per credit

(2) Part-time undergraduate and graduate students enrolled in *only ASFCCE-sponsored courses*:

ASFCCE Activity Fee	\$20
Registration Fee	20
Student Services Fee	\$8 per credit

(3) Part-time undergraduate and graduate students enrolled in *ASFCCE and Kingston-sponsored courses*:

ASFCCE Activity Fee	\$20
Registration Fee	20
Activity Fee (undergraduate students only)	23
Graduate Tax (graduate students only)	5
Student Services Fee	\$9 per credit (Kingston-sponsored courses only)
Student Services Fee	\$8 per credit (ASFCCE-sponsored courses only)

**Nonmatriculated Students****Tuition Per Credit**

Non-  
Resident Resident

001–499 Level Courses	\$161	\$556
500 Level and Above Courses	225	646

**Mandatory Fees Per Semester**

Registration Fee	\$ 20
Activity Tax	15
Student Services Fee	\$59 per credit (Kingston-sponsored courses only)
Student Services Fee	\$8 per credit (ASFCCE-sponsored courses only)

**Mandatory Fees**

**Student Services Fee.** This fee is mandatory for all full-time students enrolled at the Kingston campus, both undergraduate and graduate. The student services fee covers the cost of the Memorial Union, libraries and computing, transportation, and building (including for such projects as for the new Convocation Center). The undergraduate fee supports funds that are distributed to the Student Senate for a wide variety of student programs and activities. It also supports athletics, recreation, and arts and cultural programming, and the budgets for Career Services, Multicultural Student Services, and the offices of the Vice President for Student Affairs, the Assistant Vice President for Campus Life, and the Dean of Students. The fee paid by full-time graduate students supports the above and, instead of the undergraduate Student Senate, the Graduate Student Association.

**Health Services Fee.** The health fee is mandatory for all full-time Kingston undergraduate and graduate students, and optional for students at the Alan Shawn Feinstein College of Continuing Education. All international students are assessed this fee regardless of enrollment location. Part-time students who choose to receive their health care at URI Health Services can be

assessed this fee upon request. The health fee covers the cost of the following:

- routine office visits with URI staff providers (the full cost of visits if insurance doesn't cover the cost and/or co-pay expenses in situations where insurance covers a portion),
- ambulance/emergency transport services (by URI EMS),
- pharmacy (all over-the-counter medicines, \$5–10 co-pay for prescriptions for acute care, medications for chronic conditions at 50 percent of cost),
- administrative and clinical services provided at Health Services not covered by third party insurance, and
- health education.

A portion of the Health Services fee also supports the URI Counseling Center.

**Accident/Sickness Insurance.** It is URI policy that all full-time students as well as international students and their dependents have current health insurance to provide coverage for unexpected, extended, and expensive care resulting from accidents and illnesses that are not covered by the Student Health Services fee. All full-time students and all international students and their dependents are required to purchase school health insurance unless evidence of comparable coverage in another plan is provided to the University through a completed waiver form. Waiver forms are available online at [www.uri.edu/health](http://www.uri.edu/health). If you have questions, contact the Health Services Insurance Office at 401-874-4755.

To waive the Accident/Sickness Insurance, a student must complete and electronically submit the waiver to Health Services each year, prior to the end of the add period (the first two weeks of classes). *Unless the waiver is received, the student will be billed.* The Accident/Sickness Insurance is optional for non-international matriculating part-time students. Students who elect insurance coverage through the University are also required to pay the Health Services fee each semester that they are registered students, regardless of the number of credits they are carrying.

## Additional Fees

**Books and Supplies.** All students—both undergraduate and graduate—should expect extra expenses each academic year for books and supplies and should allow for additional expenditures for travel and personal needs.

**Credit Overload.** A credit overload fee will be charged to all matriculated undergraduate students who register and/or enroll in excess of 19 credits. This fee is equivalent to the per-credit rate given for part-time undergraduate students. Matriculated graduate students who register and/or enroll in excess of 15 credits will be billed at the per-credit rate given for graduate students. Students with combined enrollment at both the Kingston and ASFCCE campuses will also be assessed the credit overload fee if enrollment exceeds the credit limits stated above.

**Enrollment Deposit.** An enrollment deposit is required from every undergraduate student accepted and is applied to the first-term bill. In-state students pay a \$150 deposit; out-of-state and regional students pay a \$300 deposit. The fall term enrollment deposit is 100 percent refundable prior to May 1, 50 percent refundable prior to June 1, or 20 percent refundable prior to August 1, provided that the Admissions Office is notified in writing of the student's intention not to enroll. The spring term enrollment deposit is *not* refundable.

**Returning Student Deposit.** Undergraduate students returning after an absence of one or more semesters are required to remit a nonrefundable returning student deposit of \$50.

**Off-Campus Study.** Undergraduate students taking courses at another institution for credit at URI pay a fee of \$181 per semester. (See page 27.)

## Graduate Continuous Registration.

Graduate students maintaining continuous enrollment and registered for no credit (CRG 999) are required to pay a fee of \$245 per semester.

**Transcripts.** A transcript service fee of \$30 is assessed to all students in their first semester of enrollment at the University.

**Courses.** A laboratory/clinical fee of \$35 will be charged for each undergraduate and graduate laboratory or clinical course. Undergraduate engineering and pharmacy students pay a program fee commencing in their third year: \$250 per semester for full-time students, \$23 per credit for part-time students. Pharm.D. students pay a program fee of \$530 commencing in their third year.

Expenses connected with class trips and practice teaching are charged to the students concerned.

Students taking applied music courses, except for composition, are charged an additional fee of \$100 for a one-credit course (half hour of a private lesson per week) and \$195 for courses offering two, three, four, or six credits (one hour of a private lesson per week). Applied music courses for which students are charged an additional fee are MUS 110, 210, 310, 410, and 510.

Beginning in the sophomore year, student nurses must purchase authorized uniforms and nursing equipment. The approximate cost is \$300.

**Graduation.** When near completion of studies, but prior to submitting a petition to graduate, each undergraduate student must pay a \$35 graduation fee. Graduate students must pay a \$35 graduation fee during their second semester of study. Master's degree candidates must pay a thesis-binding fee of \$18, and doctoral candidates must pay dissertation-binding and microfilming fees of \$88. These fees are due before candidates submit their theses or dissertations for approval by the Graduate School.

## Late and Special Fees

**Late Registration.** A late registration fee of \$60 is charged to students whose registration is not completed before the first Monday following the first day of classes.

**Late Payment.** Unpaid balances following the term bill due date are subject to late payment/billing penalties which are based upon the outstanding amount due. The penalty is also applied to students who register late effective as of the end of the add period (first two weeks of classes) until date of registration and payment. The late payment fee is not cancelled nor reduced without presentation of written evidence of University error signed by an official of the University. Late payment fees are: \$10 per month if the balance is over \$50 and under \$400; \$15 per month if the balance is between \$400 and \$999.99; \$25 per month if the balance is \$1,000 or more.

**Returned Check.** A \$20 returned check fee is assessed with each check not accepted for deposit and returned by the bank.

**University Monthly Payment Plan.** The University offers a monthly payment plan to assist students and parents in meeting term bill obligations. A nonrefundable application fee is assessed upon enrollment. The application fee is \$30 per semester, or \$50 per academic year.

**Partial Payment.** A \$30 fee is assessed when partial payments are received following the term bill due date.

**Collection Agencies.** Term bills which are not fully paid by the end of the semester are subject to collection activity by outside agencies.

**Reassessment of Fees Policy.** Fees are reassessed and adjusted according to credit enrollment, student status, residency, course level, and course sponsorship. This results from drop/add transactions and status changes processed by the registrar during the add period. The dropping of credits after the add period will not

reduce term bills. Students anticipating fee adjustments must complete all drop/add transactions by the reassessment deadline. This policy pertains but is not limited to downward billing adjustments, including credit overload courses dropped; change in student status from full-time to part-time; part-time student dropping courses; and the assessment of program fees and lab/clinical fees, if charged.

## Tuition Waivers

The University of Rhode Island accepts tuition waivers from senior citizens and unemployed individuals; prerequisites are described below. Students who qualify for waivers must apply for financial aid and any aid received must be applied toward the amount waived. Admission into particular courses is granted on a space-available basis and at the discretion of the institution. All other costs of attendance are to be paid by the individual student.

**For Senior Citizens.** Any Rhode Island resident senior citizen who submits evidence of being 60 years of age or over and of having a household income of less than three times the federal poverty level is allowed to take courses at any public institution of higher education in the state with the tuition waived.

**For the Unemployed.** Any individual who submits evidence of currently receiving unemployment benefits from the state of Rhode Island, of having a household income of less than three times the federal poverty level, and of not being claimed as a dependent by a parent (or someone else) will be allowed to pursue course work at any public institution of higher education in Rhode Island with the tuition and registration fee waived; this waiver also applies to any Rhode Island resident who submits evidence of residency and of currently receiving unemployment benefits in another state. To be eligible for the waiver, the student must have been collecting benefits within 60 days before the first day of classes.

## Housing and Dining Fees

**Following are the rates for University residence housing for undergraduates for the year 2002–2003.** For complete information, write to the Director of Housing and Residential Life, Roger Williams Building. All rates are for double rooms. For single rooms, when available, a yearly charge is added to the double-room rate (Group A \$220; Group B \$222). Students living in residence halls are required to purchase either a board or points plan. For complete information, contact 401-874-5383.

Room Rent per year:

\$4,266 Adams, Aldrich, Browning, Burnside, Coddington, Dorr, Ellery, Hopkins, Hutchinson, Merrow, Peck, Tucker  
(\$3,626 for a triple room in these halls)

\$4,660 Barlow, Bressler, Butterfield, Fayerweather, Gorham, Heathman, Weldin  
(\$3,962 for a triple room in these halls)

Meal Plans (*offered per year*):

*Resident Board Plans (per year)*

Any 19 meals (Mon.-Sun.)	\$3,136
Any 15 meals (Mon.-Sun.)	\$2,898
Any 10 meals (Mon.-Fri.)	\$2,632

*Resident Point Plans (per year)*

Level A (58,700 points)	\$2,710
Level B (75,500 points)	\$2,878
Level C (93,500 points)	\$3,058
Level D (111,300 points)	\$3,236

*Commuter Plans (all Mon.-Sun.)*

*Semester Plan (offered per semester)*

Any 5 meals per week, Plus 7,500 Points	\$625
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*Non-Semester Plans*

*(offered with no term limit)*

Any 16 meals, Plus 5,000 Points	\$173
Any 32 meals, Plus 10,000 Points	\$328

### Residence Hall and Dining Contract.

University housing is contracted for the *entire academic year*. A **nonrefundable** fee is required at the time of application for a room; this is \$100 for new students and \$250 for continuing students. This application fee will be applied to the first-semester housing bill.

All residence hall rates are quoted for the period specified in the contract. Payments are due in full by the published term bill due date each semester or upon receipt of the bill from Housing and Residential Life. Checks are payable to the University of Rhode Island and should be remitted to Student Billing and Collection Services.

A student vacating his or her assigned quarters before the end of the period under contract will be held responsible for the total charges for the entire period, unless the move results from a withdrawal or leave of absence from the University. No refund will be given when a student moves from University quarters to a private home or decides to commute. Students who withdraw or take a leave of absence from the University mid-year may obtain Housing and Residential Life refunds based on the University refund policy.

URI is a nonsectarian institution, and resources are not available to construct special diet kitchens for religious, health, or personal reasons. Extreme medical problems are reviewed by a nutritionist. Some medical problems may be accommodated. Students requesting a medical variance from the meal plan must submit for approval a medical variance report from a physician to Dining Services prior to the first day of classes. Application forms may be obtained by contacting the Campus Access Office in the Memorial Union at 401-874-2055.

The University dining system operates on a computerized entry system using student ID cards. This card must be brought to all meals.

Students who withdraw from the residence halls may obtain Dining Services refunds based on the University refund policy posted in the Campus Access Office.

### University Refund Policies

Refunds of payments made or reductions in amounts due to the University shall be made to students who officially withdraw or take a leave of absence according to the following scale: during the first two weeks, 80 percent; during the third week, 60 percent; during the fourth week, 40 percent; during the fifth week, 20 percent; after five weeks, none.

Students receiving Federal Title IV funds, i.e., Federal Pell grants, Direct Stafford Loans, Perkins loans, Federal PLUS loans, Federal Supplemental Educational Opportunity grants, or other Title IV assistance programs are subject to the federal return of funds regulation. The regulation states that Federal Title IV funds must be returned according to a pro-rata formula based upon the amount of time spent in school up to the 60th percentile of attendance. Thereafter, federal disbursements are not adjusted. For example:

Assume that a student withdraws during the third week of school after attending 20 days and the term bill has been paid entirely by a Direct Stafford loan. If the semester consist of 100 days, 80 percent of the loan must be returned to the loan fund since the student only attended 20 percent of the semester. However, the student's bill is reduced by only 60 percent per the University's refund policy as stated above. The student will be responsible for the difference.

Personal payments and outside scholarships are not considered for refund until the term bill balance is fully paid.

Students who take a leave of absence are subject to the same federal return of Title IV funds policy as are students withdrawing from the University.

**Attendance Period.** For refund purposes under both policies, the attendance period begins on the first day of classes and ends on the official date of withdrawal or leave of absence. If an official date is not known, the last known date of attendance is used. Students who withdraw or take a leave of absence during the add period (the first two weeks of classes) are assessed tuition

and fees based upon the highest number of credits for which they are registered during this period.

The Accident/Sickness Insurance fee is not refundable unless the fee is waived, regardless of the date of withdrawal, since the student is covered for the entire academic year. The fee is cancelled, however, if the student withdraws prior to the first day of classes.

**Indebtedness to the University.** Failure to make full payment of all required fees or to resolve other debts to the University may result in denial of registration for the following semester and/or disenrollment (for example, unreturned athletic equipment, overdue short-term or emergency loans, lost library books, debts to the Department of Housing and Residential Life for damages, and obligations required by the University Student Discipline System). Appropriate departments will provide the student with notice of the debt, reason for it, and a review, if requested. Students must fulfill all financial obligations to the University before receiving transcripts or a diploma.

### Financial Aid

Financial aid is money made available from federal, state, local, or private sources which helps students attend the post-secondary institutions of their choice. At the University of Rhode Island, these varied sources are administered by Enrollment Services in Roosevelt Hall. URI's financial aid programs are designed to serve students from the widest possible range of society, and all students are encouraged to apply.

In most cases, financial aid will be awarded in a "package" of grants (which do *not* have to be repaid), loans (which have to be repaid), and student employment opportunities (part-time jobs while attending school). The purpose is to assist the students in meeting the costs of attending the University. To continue receiving financial aid, it is necessary to reapply and demonstrate sufficient financial need

each year as well as to maintain satisfactory academic progress.

Financial aid to students is awarded without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam-era veterans.

**Financial Need.** A student does not have to be from a low-income family to qualify for financial aid, but does have to have "financial need." "Need" is the difference between what it costs to attend the University and what the student and family can contribute from financial resources. Parents, insofar as they are able, are expected to bear primary responsibility for financing a child's college education, and the student is also expected to earn a portion of the resources for college expenses, usually through summer employment.

**Eligibility.** Only citizens, nationals, or permanent residents of the United States are eligible to apply for financial aid. Foreign students desiring information about finan-

cial assistance should contact URI's Office of International Students and Scholars.

To be considered for financial aid, a person must have been accepted and enrolled at least half time (six credits for undergraduates, five for graduate students) as a matriculated student at the University. Enrolled students must be making satisfactory progress toward their degree according to the University's policy on satisfactory progress (see page 25).

In general, a student who already has received a baccalaureate degree is considered eligible for only those aid programs listed as available to graduate students. This applies even if the student is pursuing a second undergraduate degree. For more information, please check with an enrollment services counselor.

**Application Procedure.** To apply for financial aid, students must complete a Free Application for Federal Student Aid (FAFSA), available online at [www.fafsa.ed.gov](http://www.fafsa.ed.gov). This form is also used to apply for state scholarships, including those for Rhode Island and

Massachusetts. Residents of other states should check with their state scholarship or grant authority to inquire if another form is needed to apply for state scholarship funds.

The awarding of financial aid for the current academic year may require validation and documentation of all information submitted to Student Financial Assistance. Therefore, students must be prepared to submit the following information if asked: signed copies of their own and their parents' last U.S. income tax returns 1040/1040A/1040EZ. When and if requested by Student Financial Assistance and Employment Services, all tax schedules must also be included.

**Application Priority Dates.** The Free Application for Federal Student Aid should be mailed to Federal Student Aid Programs after January 1, and no later than March 1. Applications completed on or before March 1 will receive first consideration for financial aid awards; however, applications will be processed as long as funds remain available.





### Federal Aid Available

*Federal Pell Grants.* The Pell Grant, available to undergraduates, is designed to form the foundation of all financial aid received. Each applicant is mailed a set of Student Aid Reports, a copy of which is electronically sent to Enrollment Services if URI 003414 was put on the FAFSA. The amount of the Pell Grant is calculated according to the cost of attendance, the number of credits for which the student enrolls, and the Pell Grant Index printed on the Student Aid Report.

*Federal Supplemental Educational Opportunity Grant.* This program is intended to assist undergraduate students with the greatest financial need. First priority is given to students receiving Pell Grants. These awards are available in amounts ranging from \$100 to \$4,000 per year.

*Federal Perkins Loan.* Eligibility is based on exceptional financial need. Undergraduates may be eligible to borrow up to \$4,000 for each year of undergraduate study. Graduate students may be eligible to borrow up to \$5,000 for each year of graduate and professional study. These loans have a simple interest rate of five percent annually. Interest does not accrue until nine months after graduation, termination of studies, or enrollment for less than half time. Minimum payments of \$90 per quarter are required, and the repayment period may extend up to ten years. Deferments and cancellations of principal are allowed in certain circumstances.

*Nursing Student Loan Program.* This program is available to undergraduate students enrolled in the College of Nursing. Long-term, low-interest loans become due and payable nine months after graduation or termination of nursing studies. The loans are designed to help financially needy students attain careers in nursing.

*Health Professions Student Loan Program.* This loan program is restricted to undergraduate students with financial need majoring in pharmacy.

*Federal Work-Study Program.* This federally supported program provides undergraduates with part-time employment during the school term and full-time employment during vacation periods. The jobs may be either with University departments, or with off-campus, nonprofit, nonsectarian, and nonpolitical agencies. Other institutionally funded employment is also available. A listing of these jobs is maintained by Student Financial Assistance and Employment Services.

*Federal William D. Ford Direct Loan.* All students who complete the FAFSA can participate in the William D. Ford Direct Loan program. Those students who meet the financial need criteria may receive in whole or in part a subsidized loan where the federal government pays all interest until six months after graduation, withdrawal, or a drop in enrollment status to less than half time. Unsubsidized loans are available for those students who do not qualify for the need-based subsidized William D. Ford loan. Those eligible to borrow under the unsubsidized William D. Ford Direct Loan program include independent undergraduate students, graduate and professional students, and certain dependent undergraduate students. The same terms and conditions as for subsidized William D. Ford loans apply, except that the borrower is responsible for the interest that accrues while the student is still in school. If you're a dependent undergraduate student, you can borrow up to \$2,625–\$5,500 each year, depending on where you are in your program of study. If you are an independent undergraduate student or a dependent student whose parents were not able to get a PLUS Loan, you can borrow up to \$6,625–\$10,500 a year, depending on where you are in your program of study; a defined portion of this loan must be in subsidized loans. Contact URI Enrollment Services for more information.

The aggregate loan limits (for full-time students) are \$23,000 for a dependent undergraduate student, \$46,000 for an independent undergraduate student (only \$23,000 of this amount may be in subsidized loans), and \$138,500 for a graduate

or professional student (only \$65,500 of this amount may be in subsidized loans); the graduate debt limit includes any Stafford Loans received for undergraduate study.

*Federal William D. Ford Direct Loan for Parents.* Parents who have good credit may borrow up to the cost of education minus estimated and actual financial aid by submitting an application to Enrollment Services. If the loan is approved, it will be disbursed in multiple installments, usually at the beginning of each semester. The interest rate is variable; the current rate is 4.86 percent and can go no higher than 9 percent. A four percent origination fee is deducted from loan proceeds at the time of disbursement.

*Rhode Island Family Education Loan (RIFEL).* This is a low, fixed-rate loan program for students and their families. Parents are usually the primary borrower on this loan with the student as a co-borrower. Borrowers must be credit-worthy and meet a specific debt-to-income ratio. Borrowers can request up to \$15,000 per year. The interest rate for the 2002–2003 academic year is fixed at 6.5 percent, with up to 15 years to repay. There is no prepayment penalty. Origination fees of 4 percent are added to the loan amount. Eligible borrowers may also take advantage of the home equity option when approved for this loan (see tax advisor for more information).

*CollegeBound Loan.* This is a variable interest rate loan based on "prime + 0." There is no payment while the undergraduate student is in school and during a six-month grace period. Students may borrow on their own if they are credit worthy. If a student is not approved on his or her own, a co-signer may be required. Once a student enters repayment and has made 24 consecutive on-time payments, he or she may request that the co-signer be released from the loan obligation. Students can borrow a minimum of \$1,000 up to the cost of their education. Borrowers can take up to 15 years to repay this loan. There is no prepayment penalty. There is no application or up-front fees, but there is



a low 4 percent fee assessed upon entering repayment. Students can apply online at [www.collegeboundloan.com](http://www.collegeboundloan.com) for instant approval.

### University Aid Available

**University Grant.** The University provides grants to over 1,000 undergraduate students. To be awarded a University Grant, the student must demonstrate financial need and a satisfactory academic record.

**Arthur L. Hardge Memorial Grant.** This grant is awarded to economically and socially disadvantaged undergraduate residents of Rhode Island who participate in Special Programs for Talent Development.

**University Scholarships.** Scholarship awards require not only financial need but evidence of high academic potential. Some scholarships have specific restrictions, such as place of residence, major, and class year. A list of available scholarships can be found at [www.uri.edu/catalog](http://www.uri.edu/catalog) (see the html version).

**Athletic Grants.** These grants are made on the recommendation of the Athletics Department to athletes who meet established qualifications. These awards are based on athletic ability rather than on need. Students interested in such assistance should contact the department.

**Regular Student Employment.** Positions funded by the University are available to more than 1,500 undergraduate and graduate students. Job postings are available in Student Financial Assistance and Employment Services.

**University Loans.** Emergency loans ranging from \$10–200 are available to full-time undergraduate and graduate students. These loans are short-term in nature (14–90 days), and can be made only when there is a means of repayment. Application forms are available in Enrollment Services.

### State and Other Sources of Aid

Undergraduate residents of Rhode Island are encouraged to apply for state scholarships or grants. While both are based on

need, the scholarships also require a strong academic record in high school. The Rhode Island State Scholarship and Grant Program is administered by the Rhode Island Higher Education Assistance Authority, 560 Jefferson Boulevard, Warwick, RI 02886. Other states offer similar programs; for more information, contact your state's scholarship agency.

There are many additional sources of financial aid available to students who qualify: scholarships from private organizations, clubs, labor unions, fraternities, sororities, and businesses. Students should apply directly to the source if they believe they qualify. Also see the URI html catalog site ([www.uri.edu/catalog/](http://www.uri.edu/catalog/)) for a list of loans, scholarships, and special awards available to undergraduate and graduate students.

**Policy on Satisfactory Academic Progress.** The Education Amendments of 1980, P.L. 96-374, October 3, 1980, state that "a student is eligible to receive funds from federal student financial aid programs at an institution of higher education if the student is maintaining satisfactory progress in the course of study he or she is pursuing according to the standards and practices of that institution."

**For Undergraduate Students.** To maintain satisfactory progress as an undergraduate student at URI for federal financial aid purposes, the student must be enrolled in a degree-granting program on at least a half-time basis (six credits) for each semester during which aid is received. Students enrolled full-time may receive aid for ten semesters in completing what is normally a four-year program. Students completing what is normally a five-year program are permitted to receive aid for the equivalent of 12 full-time semesters. Part-time students may receive equivalent aid, with an accumulation of 12 credits corresponding to a full-time semester. Two full-time (six credits) summer sessions are considered the equivalent of one semester. The determination of a transfer student's eligibility includes the semesters of federal financial aid received prior to attendance at URI.

Satisfactory progress standards will conform to the University's academic standards, as delineated in the *University Manual*. Students who are placed on academic probation will be notified of the possibility of their loss of federal financial aid eligibility. Students on academic probation for two consecutive semesters and students who are academically dismissed will be ineligible to receive federal financial aid. Criteria for probation and dismissal appear in the *University Manual*. A student who is declared ineligible to receive aid for not maintaining satisfactory academic progress may appeal the decision to the Satisfactory Progress Appeals Committee. Readmission to a program or removal from probation does not automatically constitute eligibility for federal financial aid.

Failure to maintain satisfactory progress for two consecutive semesters will result in the loss of eligibility for federal financial aid until the student is determined by Student Financial Assistance and Employment Services to once again be making satisfactory academic progress.

If there are unusual circumstances that result in the student's inability to make satisfactory progress, the student should write a letter of appeal documenting the circumstance(s) and submit the letter to the Satisfactory Progress Appeals Committee, c/o the assistant dean of student financial aid.

**For Graduate Students.** To maintain satisfactory progress as a graduate student at URI for federal financial aid purposes, the student must be enrolled in a degree-granting program on at least a half-time basis (i.e., five credits) for each semester during which aid is received. The courses must be at the graduate level and applicable to the student's approved program of study. Master's degree candidates have ten semesters to complete degree requirements on a full- or part-time basis. Students who are not in residence during the academic-year terms and who have received special permission from the dean of the Graduate School have 14 summer sessions in which to complete requirements.

Two summer sessions totaling at least five credits will be considered one part-time semester; two summer sessions totaling nine credits will be considered one full-time semester. Doctoral degree candidates have 14 semesters in which to complete their degrees, regardless of whether they matriculate with an earned master's degree.

Master's and doctoral students who have completed all course requirements including thesis research shall be considered to be making satisfactory progress at least at the half-time rate if they are registered for at least one thesis credit, or continuous registration for those in the non-thesis option. All students must be enrolled for consecutive semesters until graduation unless an official leave of absence has been approved. If students do not exercise the leave of absence option and fail to register, they are considered to have voluntarily withdrawn.

For further information, see the *Graduate Student Manual* or consult Student Financial Assistance and Employment.

## Graduate Fellowships, Assistantships, and Scholarships

Detailed information (stipends, allowances, tenure, etc.) on graduate fellowships, assistantships, and scholarships is available from the Graduate School Office. Fellowships and scholarships are awarded by the Graduate School to students selected from nominations submitted by department chairpersons. Students are advised to request nomination for these awards by the chairperson of the department in which they plan to study or in which they are currently enrolled.

Graduate students on URI fellowships, assistantships, and scholarships are expected to be full-time students (12 credits per semester) in good academic standing, and are not eligible for additional employment unless written permission is received from the Graduate School.

Graduate students have access to a national computerized database of fellowships and other financial assistance opportunities available to students pursuing advanced degrees, completing dissertation research, or seeking postdoctoral positions.

**Fellowships.** Fellowships are awarded to graduate students in recognition of their achievement and promise as scholars. They are intended to enable students to pursue graduate studies and research without rendering any service to the University.

*URI Diversity Graduate Fellowships* are awarded by the Graduate School to students from minority and underrepresented groups. *URI Foundation Minority Fellowships* are also available to students from minority and underrepresented groups, with nominations usually made by departments to the Graduate School.

*Special Fellowships* are supported by various industrial firms, private foundations, and individuals, and are usually restricted to students in particular areas of study and research. The stipends and supplemental allowances of these fellowships are not uniform.

URI Fellows receive a stipend of at least \$10,255 for the academic year and have tuition and the registration fee paid from University funds. URI Fellows are responsible for the remaining fees. Those wishing to be considered for fellowships must have their application file completed no later than February 1.

**Graduate Teaching Assistantships and Research Assistantships.** Assistantships are awarded to full-time graduate students to provide them with teaching and research training. Assistants may be required to provide service for up to 20 hours per week. Appointments are initiated by department chairpersons. To be eligible for such an appointment, students must first be admitted as degree candidates. Applications for assistantships should be completed by February 1. Appointments are announced in early April.

*Departmental Graduate Assistants* assist, under supervision, with department instructional and/or research activities. No

more than ten hours per week will be in classroom contact. Graduate assistant stipends for the 2001–2002 academic year ranged from \$10,255–\$11,135, depending upon qualifications. In addition, tuition (12 credits maximum) and the registration fee are paid from University funds for each semester of the academic year of the appointment. The student is responsible for the remaining fees. Additional remuneration is given for appointments during the summer, although this cannot be guaranteed. Stipends and tuition remissions for students appointed to partial assistantships will be prorated for the period of the appointment. The student will be responsible for the remainder of the full-time tuition and fees. The same policy applies to assistantships terminated during the academic year.

*Graduate Research Assistants* are assigned to individual research projects sponsored either by the University or an outside agency. On supported research contracts and grants, the graduate research assistants are expected to devote 20 hours per week to research activities. For this they normally receive a stipend ranging from \$10,255–\$11,135 for nine months. In addition, tuition (12 credits maximum) and the registration fee are paid in each semester of the academic year of the appointment. The student is responsible for the remaining fees. Additional remuneration is given for appointments during the summer months. Stipends and tuition remissions for students appointed to partial assistantships will be prorated for the period of the appointment. The student will be responsible for the remainder of the full-time tuition and fees. The same policy applies to assistantships terminated during the academic year.

**Tuition Scholarships.** These scholarships cover tuition and registration fee and are awarded by the Graduate School from University funds. These scholarships are awarded to qualified students demonstrating financial need. Nominations for these scholarships are made by individual departments.

## Registration

All students must register for courses through Enrollment Services in order to be properly enrolled.

Matriculated (official degree-seeking) students who meet the eligibility requirements as defined in the *Schedule of Courses* generally register in April and October for the following semester. However, freshmen entering in the fall semester may register at specified dates during the summer as part of summer orientation.

Students are expected to register for courses before classes begin. Those who are unable to do so may enroll as late registrants at Enrollment Services during the first two weeks of classes. A late registration fee shall be charged to students whose registration is not completed before the first Monday following the first day of classes (see page 21). Additional information is available from Enrollment Services.

**Nonmatriculating Students.** Such students must contact Enrollment Services for permission to enroll and for registration instructions. Registration for nonmatriculating students begins after matriculated students have registered.

**Schedule of Courses.** The *Schedule of Courses* is published in April and October for the fall and spring semesters. It is available in Enrollment Services, the bookstore, and also via the Web at [www.uri.edu](http://www.uri.edu). The University reserves the right to cancel courses offered in the *Schedule*.

**Payment of Fees.** Arrangements must be made with Enrollment Services for complete and timely payment of tuition and/or fees. If during the semester it becomes apparent that a student has not met their financial responsibilities to the University, sanctions will be imposed. Sanctioned students may not be allowed to receive transcripts or register for future semesters.

**Drop and Add.** Students are permitted to continue to add courses through the first two weeks of classes only. Courses offered by the Alan Shawn Feinstein College of Continuing Education may be added, with

approval of the instructor, by the prescribed deadline.

Students may drop courses by the drop deadline according to official procedures. However, courses dropped after the end of the second week of classes will not affect the fees that have been assessed (see page 21).

A student may drop a course after the end of the drop period only in exceptional circumstances and with authorization of the dean of their college.

**Auditing.** When you audit, you have permission to attend a course without taking it for credit. (Auditing is not permitted in noncredit courses.) You may be admitted to a class on a space-available basis with the instructor's consent as indicated by their signature on an audit authorization form, which must be filed in Enrollment Services before the end of the add period. The instructor will determine the extent to which you may participate in class activities. Your name will not appear on official class rosters, and the course will not be noted on your grade report or permanent academic record. Note: You must be enrolled in at least one other course to be permitted to audit a course without additional fees.

**Off-Campus Study.** A full-time student who wishes to study at another college and use that course work to satisfy graduation requirements at URI may register for off-campus study. The student must obtain signed approval for the off-campus courses from the dean of their college. Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off campus during senior year. Students who wish to maintain registration eligibility while studying off campus must register for off-campus study for each semester of absence from URI, or take an official leave of absence for that period.

**Veterans Benefits.** Full information describing these can be obtained from your base education officer or the VA Regional Office, 380 Westminster Street, Provi-

dence, RI 02903; in the U.S., call 1-800-827-1000.

Veterans enrolled in Kingston who are eligible to receive VA educational benefits must notify Enrollment Services in person. In order to satisfy VA regulations, students who receive VA educational benefits must report all changes in academic status to the veterans registration clerk in Enrollment Services. Veterans enrolled in courses through the Alan Shawn Feinstein College of Continuing Education must be certified by that college.

Recipients of VA educational benefits are governed by the same University policies as are all other students.

**Transcripts.** Students can obtain a copy of their transcripts by submitting a written request to Enrollment Services. Transcripts will not be issued to students who have unpaid financial obligations to the University.

**Change of Address.** It is the responsibility of the student to report changes of local or home address to Enrollment Services. Students may do so by dialing 401-874-9500 and following the prompts.

**Required Identification.** In order to obtain a University ID card and be certified for employment, students must possess a photo identification card, such as a driver's license, and a certified copy of their birth certificate. A valid passport serves both purposes.

**Readmission.** Students formerly enrolled at the University and seeking re-entry may obtain applications for readmission at the Office of Enrollment Services. Readmitted students must make a \$50 advance deposit. All applications for readmission must be submitted to Enrollment Services no later than August 15 for the fall semester, and December 31 for the spring semester.

# UNDERGRADUATE ADMISSION

Ideally, admission to the University is a process of mutual selection. It is hoped that those students who seek admission will also be the kind of students sought by URI: those who will benefit from the opportunities afforded here; those who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study; who are committed to becoming contributing members of the University.

Students are selected for enrollment primarily on the basis of their academic competence and without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam-era veterans. The University has been authorized under federal law to enroll nonimmigrant foreign students.

Much of the information provided in this section applies primarily to students at the Kingston Campus.

At the University's Providence Campus, "performance based admission" (PBA) is the policy. For University applicants without recent evidence of academic success, but with the potential to successfully complete college-level work, this represents an opportunity to pursue a college degree. PBA is available to applicants whose last educational experience occurred at least three years ago, and who have graduated from high school or earned an equivalency diploma. Performance based admission is limited to students applying to the Alan Shawn Feinstein College of Continuing Education for undergraduate degree programs. For more information, contact an academic advisor at the University's Providence Campus, Room 245, 401-277-5160. You can find more information on offerings at the Providence Campus on page 73 of this catalog. Students intending to transfer from Providence to programs at the Kingston campus should be aware of all requirements and discuss them with their advisors.

All freshmen pursuing four- or six-year degree programs at the Kingston Campus are admitted to University College, a college of advising and academic student services. Many who are undecided about their choice of major use their year or two in University College to explore their interests before declaring a major. Students who have identified their prospective majors are assigned faculty advisors in that area and follow their chosen course of study while in University College. URI evaluates applicants' credentials in terms of their stated prospective majors and the space available in professional programs with limited enrollments.

## Admission Requirements

Admission to URI is competitive, and primary emphasis in the review process is placed on a student's high school record, quality of courses taken, grades earned, and performance on standardized tests (SAT or ACT). Extracurricular activities, alumni tradition, and letters of recommendation are also considered. The students offered admission for fall 2001 presented an average class rank in the top 30 percent of their high school class, with SAT scores of approximately 1,130 combined.

SAT or ACT tests are required for freshman candidates; transfer students from other colleges are assessed mainly on their earlier college records. Each candidate is given individual consideration; however, a minimum of 18 units of college preparatory work is expected: four units in English,



three in algebra and plane geometry, two in a physical or natural science, two in history or a social science, two in the same foreign language, and additional units that meet the requirements of the college in which the candidate expects to major. All students are encouraged to select their additional units from the arts, humanities and foreign languages, mathematics, social sciences, or laboratory sciences. Candidates for the College of Engineering, the College of Business Administration, and majors in chemistry, computer science, and physics, must complete four units of mathematics (trigonometry); candidates for the College of Engineering should also select chemistry and physics. To be considered for admission to the College of Business Administration, freshman candidates must have a fourth unit of math, either pre-calculus or trigonometry. Applicants to the Bachelor of Music degree program must audition and must contact the Department of Music for specific requirements. Candidates with more than 23 transferable college credits are classified as transfer students.

Students presenting official GED results in lieu of a high school diploma must present secondary school or college records

that show successful completion of all the admissions requirements listed here.

International candidates must submit original or certified copies of original documents (in the original language) and notarized translations in English. Candidates must meet the University's academic requirements. They must show that they possess funds for their first year and that funds for subsequent years will be available. If government or reserve bank permission is required to transfer funds from the student's country to the United States, a notarized copy of the permission is required. No financial aid is available to international students.

## Application Procedures

Students should discuss their plans for study at the University with their academic counselors as early as possible to establish realistic goals and program selections. URI admissions counselors will be glad to correspond with students about individual problems. Requests for application forms and information should be sent to Undergraduate Admissions, 14 Upper College Road, Kingston, RI 02881-1391. You may also call 401-874-7100, or visit the Admissions Web page at [www.uri.edu/admissions/](http://www.uri.edu/admissions/).

Inquiries from international students concerning nonimmigrant visas, transfers, funding, etc., should be sent to URI's Office of International Students and Scholars, 37 Lower College Road, Kingston, RI 02881; e-mail [issoff@etal.uri.edu](mailto:issoff@etal.uri.edu). Inquiries concerning housing should be sent to the Department of Housing and Residential Life (for on-campus residence) or Off-Campus Housing.

Students are enrolled at the beginning of the fall semester in September and at the beginning of the spring semester in January. *Not all programs enroll new students in January.* High school seniors are urged to submit applications early in their final year of preparatory study, since URI reviews applications on a continuing basis as soon as complete credentials are submitted. Applicants are notified as soon as decisions are made. The closing date for

fall term freshman applications is March 1; transfer applications are due by May 1. Most decisions are reported in February–April. The closing date for spring term applications is November 1.

**Early Action and Centennial Scholarships.** To qualify for Early Action and Centennial Scholarship consideration, a *completed* application for admission with the candidate's signature, official high school transcript, standardized test scores, and application fee *must be received in Admissions by December 13, 2002*. Decisions will be made on complete applications by January 14, and offers of admission are nonbinding. Students offered admission under the Early Action plan may apply to other colleges and are not required to make a commitment to URI prior to May 1.

Transfer applicants are not eligible for Centennial Scholarships; this includes students who earn more than 23 college-level credits while in high school and high school graduates who have attended other post-secondary institutions.

**Admissions Inquiry Line.** Candidates may check the status of their applications from a touch-tone phone from November–May, Monday–Friday, 8:30 a.m.–4:30 p.m. Eastern time. Instructions are forwarded to candidates when applications are received.

**Entrance Tests.** All freshman candidates for admission must take the Scholastic Aptitude Test (SAT 1) or the American College Testing Program Test (ACT). Applicants who have been away from formal studies for at least three years should contact Admissions about entrance requirements.

Applicants are encouraged to take the SAT 1 as early as possible in their senior year; delay beyond January reduces a candidate's prospects for a timely decision. Full information concerning this test may be obtained from local high schools or by writing to CEEB at P.O. Box 592, Princeton, NJ 08540. Further information regarding the ACTs is available from ACT, P.O. Box 168, Iowa City, IA 52243.

Students whose first language is not English are encouraged to submit their official Test of English as a Foreign Language

(TOEFL) or English Language Placement Test (ELPT, an SAT II examination) results to supplement their SAT verbal scores. International candidates for whom English has not been the language of instruction must submit official TOEFL examination results of 213 on computer version or better, or ELPT examination results of 965 or better. The TOEFL examination is administered by the Educational Testing Service, Princeton, NJ 08540. For information about the ELPT, write to CEEB at P.O. Box 592, Princeton, NJ 08540.

**Interviews.** A limited number of personal interviews are available, but are not required of all applicants. It would be impossible for the admissions staff to interview all candidates, but individual conferences can be arranged with professional staff and student interviewers on a space-available basis.

**Question and Answer Sessions.** These are scheduled each week while school is in session and during the summer. Students and their families are invited to these meetings to get acquainted with URI. Call ahead to confirm available dates: 401-874-7100, or check the Web site.

**Campus Tours.** A virtual campus tour is available at [www.uri.edu/home/tour/](http://www.uri.edu/home/tour/). Students conduct live tours of the campus for visitors, Monday–Saturday, while classes are in session. Group tours for high schools and other organizations may also be arranged. For more information, call 401-874-7100 or refer to [www.uri.edu/admissions/](http://www.uri.edu/admissions/). Tours of the Narragansett Bay Campus and the Graduate School of Oceanography may also be arranged. Call 401-874-6211 for details.

**Early Enrollment/Admission.** Students who have completed their junior year of high school with superior records are eligible for early admission. A part-time study program may be arranged for students wishing to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students will normally have completed three years of English, three of mathematics, two of foreign language, two to three of social studies or history, and two of natural or physical science. Students should be academically competitive within their high school class, have corresponding scores on the College Board SAT, ACT, or equivalent tests, and the endorsement of their school. Those interested should plan with their high school counselor early in their junior year and direct further inquiries to Admissions.

**Advanced Standing.** Advanced placement for freshmen is granted to students who have completed college-level courses in a high school participating in the Advanced Placement Program and have passed with a grade of 3.00 or better the CEEB Advanced Placement Examination in the following subject areas: art history, art studio (drawing and general), biology, chemistry, computer science (AB), English (language and composition; literature and composition), French (language and literature), German (language), history (European and United States), Latin (Vergil and Catullus-Horace), mathematics (calculus AB and BC), music theory, physics (B; C, mechanics; and C, electricity and magnetism), Spanish (language and literature). For a list of University courses considered equivalent to advanced placement classes, please contact Admissions.

In addition, students can take proficiency examinations administered by University departments to be granted advanced placement. Entrance with advanced standing can accelerate the completion of degree requirements, or enrich the undergraduate program with greater scope for elective or advanced courses.

**Transfer Students.** Transfer students from another college or university must have official transcripts sent directly from the institution, whether or not they expect or desire credit for such work; their high school record must also be submitted. Transfer candidates must be in good standing and eligible to return to the institutions they

attended previously. Credit is not awarded for course work taken prior to admission to URI which is disclosed after acceptance. Only grades of C or better will transfer.

Credit transferred from other schools is limited by the following restrictions. No more than half of the credits URI requires for graduation can be transferred from two-year institutions. Students must earn at URI at least one-half of the credits required for a major, at least one-half the credits required for a minor, and at least one-fourth the credits required for graduation. Only grades earned for course work at URI are included in the calculation of a student's quality point average.

A minimum cumulative QPA of 2.50 is required, but most successful applicants have much higher quality point averages. Certain programs may require a higher QPA or specific prerequisite courses. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer. The transfer of general education credits is described on page 32. Priority consideration is given to applicants with 24 or more transferable credits. Students may apply to the teacher education programs only after acceptance by an academic department. Some colleges do not enroll new transfer students every semester.

Transfer candidates for the College of Pharmacy are admitted for the third year only. They must present credentials for the successful completion of the following courses: General Chemistry I and II (including labs), Calculus I, General Zoology (or Biology I and II), Anatomy, Physiology, Organic Chemistry I and II, Microbiology, Biochemistry, and Biostatistics (or Statistics).

The College of Business Administration requires transfer students to have 60 college credits, including: Accounting I and II; Business Communications; Calculus; Economics I and II; Statistics I and II; and one computer course. Students not meeting these requirements may be admitted to University College and later transfer to CBA provided they complete the above-

named courses and meet the college's GPA requirement. The University grants direct transfer credit for equivalent upper-level business courses taken at institutions that are accredited by AACSB—The International Association for Management Education. Upper-level courses taken at an institution not accredited by AACSB must be validated by examination. Courses not validated will be awarded free elective credit.

**Performance Based Admission.** This is available at URI's Providence Campus. See page 76 for more information.

**International Baccalaureate Degree Program.** URI awards credit for most higher level examinations taken in high school and passed with a score of 5, 6, or 7. Course credit is awarded at the discretion of individual departments. No credit is awarded for standard level examinations.

**Proficiency Examinations.** Students showing evidence of advanced knowledge or who have taken "enriched" programs in high school may be exempt from certain courses and requirements if they take departmental proficiency exams. A student who successfully passes such an exam earns credits as well as exemption from the course. However, students who, by successfully passing proficiency examinations, have the general education requirements waived in writing, mathematics, and/or foreign languages or culture must still complete the specified number of credits for their degree programs.

Upperclass students interested in taking these exams should contact their academic dean. New students may obtain further information during orientation or from their University College advisor.

**College Level Examination Program.** Students who have not been pursuing formal studies for at least three years may take *CLEP General Examinations* to demonstrate academically measurable learning acquired in nontraditional ways. URI students must secure prior approval from their academic dean to take the exams for credit, and the exams must be taken during the first semester of enrollment. Trans-

fer students may receive credit from CLEP General Examinations taken prior to enrollment at URI, provided that their scores meet URI standards and their academic dean judges that the CLEP credit does not duplicate other transfer credit. CLEP General Examinations may be taken in the following areas. URI credits are in parentheses.

	<i>Minimum score</i>
English Composition (English Composition elective, 3 credits)	420
English Composition with essay (WRT 101 and Communication elective, 6 credits)	420
Humanities (Fine Arts and Literature elective, 6 credits)	420
Natural Science (Natural Science elective, 6 credits)	420
Social Science and History (Social Science elective, letters elective, 6 credits)	420
Mathematics (no credit)	

Academic departments may use *CLEP Subject Examinations* as proficiency exams to test students' mastery of the subjects taught by the department. A department that judges a CLEP Subject Examination to be a satisfactory proficiency exam decides what credit should be awarded within the department to students passing the exam, establishes the minimum score for credit, decides whether students must answer the optional essay questions supplied by CLEP, and decides whether students must pass a supplementary department test, such as a lab exam. The following CLEP Subject Exams are accepted by departments as proficiency examinations.

*The minimum score required to earn URI credit is 50 for each exam.*

	<i>URI credits</i>
Accounting Principles (ACC 201, 202)	6
Algebra/College	N/A
Algebra/Trigonometry (MTH 111)	3
American Government (PSC 113)	3
American Literature (ENG 241, 242)	6
Analyzing and Interpreting Literature (ENG 110 and 3 credit elective)	6
Biology General (BIO 112, 113)	8
Business Law Introductory (BSL 333)	3
Calculus Elementary Function (MTH 141 and 2 credit elective or MTH 131 and 3 credit elective or BAC 120 and 3 credit elective)	6
Chemistry General (CHM 101, 102/112, 114)	8

Economics Macro Principles (ECN 202)	3
Economics Micro Principles (ECN 201)	3
Ed. Psychology Intro. (EDC 312)	3
English Literature (ENG 251, 252)	6
French Language (Level I & Level II)	N/A
German Language (Level I & Level II)	N/A
History, US I (HIS 141)	3
History, US II (HIS 142)	3
Human Growth Development (HDF 200 or PSY 232)	3
Inf. Systems & Computer App. (CSC 101 or BAC 110)	3
Management Principles (MGT 301)	3
Marketing Principles (MKT 301)	3
Psychology Intro. (PSY 113)	3
Sociology (SOC 100)	3
Spanish Language (Level I & Level II)	N/A
Trigonometry	N/A
Western Civilization I (HIS 112)	3
Western Civilization II (HIS 114)	3
Western Civilizations I & II	N/A

**Health Questionnaire.** Every newly entering student is provided a health questionnaire from Health Services, which must be completed and returned promptly. It provides Health Services with basic health information prior to the student's arrival on campus. Questionnaires are distributed after admission to URI and play no part in the acceptance process.

Each entering student must also provide a certificate signed by a licensed health care provider giving the dates of immunizations to protect against rubella (German measles), rubeola (measles), and mumps, in addition to a tetanus, diphtheria (Td) booster within ten years (per Section 23-1-18(9) of the general laws of Rhode Island). This certificate is included with the questionnaire mailed to students. Students failing to comply with this requirement may face sanctions on registration.

**New England Regional Student Program.** Through a cooperative plan sponsored by the New England Board of Higher Education, students from other New England states may enroll in designated programs at URI which are not offered in their own states. Certain programs at other New England state universities are open to Rhode Islanders on a reciprocal basis. Regional students at URI will be

charged the in-state fee plus a 50 percent surcharge. If at any time a student transfers out of the New England Regional Student Program, out-of-state fees will apply.

Details are available from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111 ([www.nebhe.org](http://www.nebhe.org)), or high school guidance offices. All new undergraduate or graduate students apply for regional student status through Undergraduate or Graduate Admissions as part of the application process. The Office of Registration and Records provides information pertaining to this program for students already enrolled at URI.

Continuing or returning students claim eligibility by submitting a formal request to Registration and Records prior to the end of the add period of the semester in which regional status is to be effective.

**Talent Development.** URI encourages the application of minority and disadvantaged individuals from Rhode Island. In 1968, the Talent Development program was established here to recruit and retain minority and disadvantaged applicants. "TD" provides an opportunity for URI admission, an academic pre-matriculation program in residence at Kingston, and consistent academic support throughout a student's undergraduate program. Financial aid is available for students accepted to Talent Development; need is determined by the filing of a Free Application for Federal Student Aid (FAFSA) form. For more information on this program, please see page 13 or visit [www.uri.edu/talent\\_development/](http://www.uri.edu/talent_development/).

Interested students should apply to Talent Development during their senior year in high school. Those possessing an equivalency diploma or who have been out of high school for some time are also encouraged to apply. Applications and all credentials should be sent to URI Undergraduate Admissions, 14 Upper College Road, Kingston, RI 02881-1391, from October 1 through March 1.

# UNDERGRADUATE PROGRAM REQUIREMENTS

This section deals with academic requirements, regulations, and opportunities for undergraduates which are University-wide rather than college-related.



Consistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its general education requirements and encourages students to select free electives that cross departmental and college lines.

**NOTE:** The University administration may alter, abridge, or eliminate courses and programs of study. While every effort is made to keep this catalog current, not all courses and programs of study listed may be available at the time of student matriculation. Similarly, course and program requirements may be changed from time to time. In all cases, every effort will be made to accommodate individual students whose exceptional circumstances may make it difficult or impossible to meet the changed requirements. Changes in the academic calendar may also be made when deemed in the best interests of the University.

## General Education Requirements

The University believes that all undergraduate students, regardless of their degree programs, need experience in the study of fundamentals which builds on the student's previous education and continues through the undergraduate years and beyond. All bachelor's degree students follow the same University-wide General Education requirements. In their first semester, all entering freshmen and new transfer students with less than 24 credits are required to take *URI 101 Traditions and Transformations: A Freshman Seminar*, including community service provided by the Feinstein Enriching America Program (see "Courses of Instruction," page 286).

General Education is that part of the undergraduate curriculum in which students explore a broad spectrum of intellectual subjects, approaches, and perspectives. The General Education component of the curriculum aims to help accomplish three goals: 1) develop further the essential English communication abilities on which advanced studies depend; 2) offer experience in five broad subject areas: fine arts and literature, letters, mathematics, natural sciences, and social sciences; and 3) expose the student to a foreign language or culture.

Corresponding with these goals, the general education program is divided into the following components:

**English Communication.** *Six credits* in English communication, at least three of which must be in a course designed specifically to improve written communication skills.

**Fine Arts and Literature.** *Six credits* in courses related to historical and critical study of the arts and literature as well as creative activity.

**Foreign Language or Culture.** *Six credits* or the equivalent in a foreign language or foreign culture.

**Letters.** *Six credits* in courses that address fundamental questions about the human condition, human values, and ways of communicating these values.

**Mathematics.** *Three credits* in a course specifically designed to provide training in college-level quantitative skills and their application.

**Natural Sciences.** *Six credits* in courses in physical, chemical, or biological sciences.

**Social Sciences.** *Six credits* in courses related to the study of the individual (development and behavior) and society.

*Specific courses that may be used to meet these requirements are listed in the following groups:*

**English Communication: Writing (Cw)**—BGS 100; ELS 112, 122; HPR 112; WRT 101, 201, 227, 235, 301, and 333. **General (C)**—COM 101 and 103; HPR 111; LIB 120; PHL 101.

**Fine Arts and Literature (A):** AAF 247, 248; ARH 120, 184, 251, 252, 284, 285, 359, 364, 374; ART 101, 103, 203, 207, 215, 231, 233; CLA 391, 395, 396, 397; CLS 160, 250, 335; COM 231; ENG 110, 160, 241, 242, 243, 247, 248, 251, 252, 260, 262, 263, 264, 265, 280, 338, 355, 356, 357, 358, 366, 367, 368, 373, 381, 382; FLM 101, 201, 203; FRN 391, 392, 393; GER 392; HPR 101, 105; ITL 325, 326, 391, 392, 395; LAR 201; MUS 101, 106, 111; PLS 233; RUS 325, 326, 391, 392; SPA 305, 306, 307, 308, 325, 391, 392, 393; THE 100, 181, 351, 352, 381, 382, 383.



**Foreign Language or Culture (F):** This requirement shall be fulfilled in one of the following ways: 1) demonstration of competence through the intermediate level by a proficiency examination or by successfully completing the 104 level in a living language or the 302 level in a classical language (students who fulfill this requirement through an examination cannot earn course credit for graduation; students who earn less than six credits in fulfilling the requirement should apply credits to the elective or major areas); 2) a two-course sequence in a language previously studied for two or more years in high school through at least the 103 level in a living language or 301 in a classical language appropriate to a student's level of competence (e.g., 102 and 103, 102 and 301; 131 and 103; 103 and 104; 301 and 302); 3) course work in a language not previously studied (or studied for less than two years in high school) through the beginning level; 4) study abroad in an approved academic program for one semester; 5) majoring in a foreign language; or 6) course work selected from one foreign culture cluster taken, if possible, in the same or successive semesters from the following list: *Africa*, APG 313, HIS 388, PSC 408; *American Indian*, APG 303, 311, ENG 338, HIS 344; *Ancient Greece and Rome*, ARH 354, CLA 391, 395, 396, 397, ENG 366, GRK 110, HIS 111, 303, PHL 321; *Asia*, HIS 171, 172, 374, 375, PHL 331, RLS 131; *France*, ARH 265, FRN 392, 393; *Germany*, GER 392, HIS 327; *Ireland*, APG 325, WMS 333; *Israel*, HIS 378, PSC 321; *Latin America*, APG 315, HIS 180, 381, 382, 384, 385, SPA 393; *Medieval Europe*, ARH 356, HIS 112, 304, ITL 395, PHL 322; *Middle East*, HIS 177, 376, 377, PSC 321; *Modern British Civilization*, ENG 252, HIS 123; *Modern Europe (Early)*, ARH 359, HIS 113, 306, 307, 314, PHL 323; *Modern Europe*, ARH 363, ENG 373, HIS 114, 310, 311, PSC 401; *Renaissance in Europe*, ARH 365, ENG 373, HIS 305, ITL 391, SPA 391; *Russia and the Soviet Union*, HIS 132, 332, 333, RUS 391, 392, PSC 407; *URI in England*, ENG 397, HIS 397. In addition, HPR 106 may be used by students in the Honors Program to fulfill this requirement. Six credits of a full-

semester approved Intercultural Internship in a foreign country through the Office of Internships and Experiential Education may be substituted for the culture cluster. *Formally registered international students and students with recognized immigrant status are exempt from the foreign language or culture requirement.*

**Letters (L):** AAF 150; APG 327; BGS 392; CLS 235; COM 200, 205, 210; EGR 316; HIS 111, 112, 113, 114, 116, 117, 118, 123, 130, 132, 141, 142, 145, 146, 150, 160, 171, 172, 177, 180, 304, 305, 306, 307, 309, 310, 311, 314, 323, 327, 328, 332, 333, 340, 341, 346, 353, 354, 360, 376, 377, 381, 382, 384, 398; HPR 104, 107, 202, 203; JOR 110; LAR 202; LET 151, 351; NUR 360; PHL 103, 204, 210, 212, 215, 217, 235, 314, 316, 318, 321, 322, 323, 324, 325, 328, 331, 346, 355; PSC 240, 341, 342; PSY 310; RLS 111, 125, 126, 131; WMS 220, 333.

**Mathematics (M):** BAC 120; CSC 201; HPR 108; MTH 107, 108, 111, 131, 132, 141, 142; STA 220.

**Natural Sciences (N):** APG 201; AST 108; AVS 101; BCH 342; BGS 391; BIO 101, 102, 104A, 104B, 286; CHM 100, 101, 102, 103, 105, 112, 114, 124, 191, 192; GEO 100, 102, 103, 110, 120; HPR 103, 109; MIC 102; NFS 207; NRS 212; OCG 110, 123, 131, 401; PHY 109, 110, 111, 112, 140, 185, 186, 203, 204, 205, 213, 214, 273, 274, 275, 285, 286; PLS 150; TMD 113.

**Social Sciences (S):** APG 200, 202, 203, 220, 319; BGS 390; COM 220; ECN 100, 201, 202, 381; EDC 102, 312; ENG 232, 330, 332; GEG 100, 101, 104, 200; HDF 225; HPR 102, 110; HSS 350; LIN 200, 202, 220; MGT 110; NRS 100; NUR 150; PSC 113, 116, 201, 221, 288; PEX 123; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 102, 204, 206, 212, 214, 216, 224, 230, 238, 240, 242, 306, 316, 330, 336; TMD 224; WMS 150.

Students in the Honors Program can receive general education credit for honors sections of courses that have been approved for general education credit.

Transfer students can receive general education credit for courses taken at other institutions as long as such credits are in courses equivalent to courses given general education credit at URI.

*Students must meet the curricular requirements of the colleges in which they plan to earn their degrees. Some colleges require that students select specific courses from the lists given for the various general education components. Therefore, students must refer to the requirements specified for their programs (see "Undergraduate Programs," page 45).*

In the colleges of Arts and Sciences and Human Science and Services and for the Bachelor of General Studies, credits within a student's own major may not be counted toward general education requirements in fine arts and literature, letters, natural sciences, or social sciences. In other colleges, credits within a student's professional college may not be counted toward any general education requirements. However, courses that serve as prerequisites for a major can be used to fulfill the general education requirements.

## Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into a degree-granting college in the junior year. These are listed in the curriculums of the individual colleges.

The responsibility for meeting all course and credit requirements for the degree rests with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions, during summer session, or in the Alan Shawn Feinstein College of Continuing Education must have prior approval from their academic deans.

## Capstone Experiences

A capstone experience integrates course work throughout the undergraduate major program. Capstone experiences include courses, internships, portfolios, senior theses, research/design projects, etc. They are scheduled for the senior year.

Capstone experiences may either be required or simply recommended. See your program of study for more information.

## Minor Fields of Study

Undergraduate students may declare a "minor" field of study. Requirements for a minor may be satisfied by completing 18 or more credits in: 1) any one of the University-approved minors; 2) a curriculum other than the student's major; or 3) related studies from more than one department under the sponsorship of a qualified faculty member. Descriptions of approved interdepartmental minors follow. Descriptions of requirements for approved departmental minors may be found in the departmental sections.

To declare a minor, a student must have the approval of the department chairperson of the minor field of study and the dean. Faculty sponsorship is required for the third option listed above. Students in the College of Business Administration need the approval of the Scholastic Standing Committee for the third option. Non-business students wishing to obtain a departmental minor in the College of Business Administration should expect to take the six courses over a period of two years. Admission is on a space-available basis only, and therefore not guaranteed.

A minimum quality point average of 2.00 must be earned in the minor courses, and at least 12 of the 18 credits must be at the 200 level or above. At least half of the credits required for the minor must be earned at the University of Rhode Island. general education requirements may be used for the minor, but no course may be used for both the major and minor field of study. Minor courses may not be taken on a pass-fail basis.

Application for the minor must be filed in the academic dean's office no later than the beginning of the student's final semester or term.

## Interdepartmental Study

Students are encouraged to develop interests across departmental lines. A number of such programs are available both as areas of interest or minors, and as degree programs. The interdepartmental minors are given in the following list. For interdepartmental majors in African and African-American studies, comparative literature studies, environmental plant biology, human science and services, public relations, textile marketing, and women's studies, refer to the Index at the back of this catalog. For degree programs in marine and environmental studies, see page 37.

### *African and African-American Studies.*

Students who declare African and African-American studies as a minor are required to take two core courses: AAF 201 and 202 (six credits). In addition, students select four electives (12 credits) from the following: AAF 250, 360, 390, 410; APG 313; COM 333; ECN 386; ENG 247, 248, 362, 363, 364, 474; HIS 150, 384, 388; and PSC 408. Students who want to use other courses that have as their central focus some aspect of the black experience may do so with permission from the program director.

*Asian Studies.* Students who declare a minor in Asian studies are required to complete 18 credits including at least two courses (6 credits) from the following: HIS 171, 172, 374, 375; PHL 331; PSC 377; RLS 131; THE 382. The remaining 12 credits may be selected from the preceding group or from the following: BUS 353; CHN 101, 102, 103, 104; COM 337, 437, 491, 492; HIS 481, 495; JPN 101, 102, 103, 104; LAN 191, 192, 193, 194; PSC 303, 456, 457. At least 12 of the 18 credits must be taken at the 200 level or above. Students interested in the minor should contact Timothy George in the History Department; a member of the Asian Studies Advisory Committee will then be assigned as the advisor for the minor and will assist the student to fulfill its requirements.

*Biology.* Students who declare biology as a minor must take BIO 101; BIO 102; and MIC 211 or MIC 201. The remaining courses may be selected from BCH 311 and any BIO or MIC course. At least 18–20 credits are required, and at least 12 of the 20 credits must be taken at the 200 level or above.

*Community Planning.* The Department of Community Planning and Landscape Architecture offers a minor in community planning. Students who declare this minor must complete 18 credits including CPL 210, 410, and 498 (for 9 credits). In addition, students select three elective courses for 9 additional credits from the following: AAF/PSC 410, 466; CPL 391, 392, 397; CPM/MAF 434; CVE 446; ECN 402, 404; GEG 103; HDF 418, 424, 434, 440; MAF 484; PHL 318; PSC 221, 402; and SOC 214, 240. These elective courses cannot be simultaneously counted toward a major.

*Comparative Literature Studies.* Students who declare comparative literature studies as a minor must earn 18 credits distributed as follows: six credits in comparative literature studies at the 200 level or above; 12 credits from literature courses in comparative literature, English, or languages, of which six credits must be in one national literature either in the original language or in translation. Students majoring in English or languages may not count courses in their major toward this minor. For a description of the degree program in comparative literature studies, see page 55.

*Film Studies.* Students who declare a minor in film studies must complete 18 credit hours of courses in which film or video is the primary text of study. FLM 101 is required in the minor, plus a minimum of three credits in each of the three following approaches to film study: *Aesthetic* (ARH 374, 376, 377; ART 215, 316); *Cultural* (AAF 352, FRN 320; HIS 358, ITL 315); and *Literary* (ENG 300A, 300B, 303, 304). One of the following may be used to satisfy the requirement in any one of the three approaches above: FLM 201, 203; COM 341, 342; ENG 302; or WMS 350F. Experimental and special topics courses in film may

be used to fulfill requirements for this minor through the program's petition process.

*Financial Counseling and Planning.* Students outside the Department of Human Development and Family Studies may declare a minor in financial counseling and planning by completing 18 credits as follows: HDF 205, 418, 424, and 426; one course from HDF 210, 225, or 428; and one course from HDF 450, 451, or 477.

*Forensic Science.* Students who declare a minor in forensic science must complete 18 credits including two credits of CHM 391 (2 credits) and three credits of research or a practicum related to forensic science. The practicum can be in the form of participating in a Forensic Science Partnership research project or internship on or off campus. The remaining 13 credits may be selected from the following: APG 300\*, 317, 350\*; APG/PSY 405\*; BCH/BIO/ASP/PLS 352\*; BCH/MIC 403; BCH/BIO 437\*, 451\*; BCH 481\*, 482\*, 484\*; BIO 242\*, 244\*; BIO 381/ENT 385\*, BIO 382/ENT 386\*; BMS 225\*, 313, 322, 325, 326, 416, 525, 530\*, 535\*, 544, 546; CHE 332\*, 333, 438\*, 491, 539\*, 576; CHM 226\*, 228\*, 412\*, 414\*, 425\*; COM 215; DHY/CMD/PHT 440\*; ENT 411 or 511\*; GEO 103, 320\*, 321\*, 554\*; PHP 316, 318, 324; PLS/ASP 355\*; PLS 361\*; PSC 472\*; PSY 254\*, 335\*, 460, 466, 479; SOC 216, 230, 370, 420\*; SOC/PSC 274\*; TMD 303\*, 313\* (asterisked courses have prerequisites not included in this program; students are responsible for completing these prior to enrolling in the course). It is suggested that no more than two courses in the minor be from any one department and that all students take at least one chemistry course in addition to CHM 391. Students interested in this minor should contact Dr. Jimmie Oxley, Department of Chemistry.

*General Business.* Students who wish to gain some business career skills may declare general business as a minor. This minor requires 21 credits hours including ACC 201, BAC 110, ECN 201, and MGT 110. The remaining nine credits may be selected from any offerings in the College

of Business Administration; however, six of the nine credits must be at the 300 or 400 level. Students are required to meet all prerequisites.

*Gerontology.* The program in gerontology is a University-wide program that promotes study, teaching, and research in aging. It also maintains relationships with state and local agencies serving Rhode Island's older population. This affords opportunities for research, internships, and field experiences to students interested in the problems of aging.

The Bachelor of Science program in human development and family studies is the recommended major for gerontology. There is also the opportunity for students taking their major studies in a number of areas to do a less specialized study in aging by declaring a minor in gerontology. This must be done no later than the first semester of the senior year. It requires 18 or more credits in aging-related studies approved by the program in gerontology and the college in which the student is registered.

HDF 314 (Introduction to Gerontology) is required for either specialization. Undergraduate gerontology courses include: DHY 462; NFS 395; HDF 315, 431, 440; and SOC 438. Also relevant are HDF 421, 450, 480; NUR 349, 360; BIO 242; and the Office of Internships and Experiential Education.

It is important to take courses that fulfill degree requirements from the beginning. Students who wish to specialize in aging are advised to contact the program in gerontology early in their University studies.

*Hunger Studies.* This minor intends to prepare students for leadership roles in understanding and eradicating hunger. Requirements include 18 credits (at least 12 at the 200-level or above), nine of which will be core courses, including the introductory course HSS 130; up to three 1–3-credit internships; and a 3-credit capstone course which will include one credit for portfolio development. No course may be used for both the major and minor. Courses in general education may be used for the minor.

All courses must be taken for a grade, except for the internship and portfolio credits, and a grade of 2.00 or better must be earned in each graded course. To declare this minor, a student must have the approval of a program advisor and an academic advisor. For more information, contact Dr. Kathleen Gorman, Director, Feinstein Center for a Hunger Free America, URI Providence Campus, or Dr. Lynn McKinney, Human Science and Services, Quinn Hall, Kingston.

Core courses: 9 credits; HSS 130 (3 credits), Internship (total of 3 credits), HDF 434 (3-credit capstone, 1 credit for portfolio development). Optional: URI 101 with a focus on hunger/social justice (1 credit).

Electives: 9 credits; may be focused on a particular theme. Approved electives include CPL 210; NFS 276, 394, 395; HDF 357, 489G; HSS 120; PHL 217; PLS 305; PSC 485.

*International Development.* The international development minor is available to undergraduates interested in employment overseas or in domestic enterprises with international operations.

Students choosing this minor must complete 18 credits, with a maximum of six credits at the 100 or 200 level. Students must complete the following: 1) CPL 300 (three credits); 2) language or culture (six to nine credits), to be met by the completion of at least six language credits through the intermediate level (103 or 104) or placement in the conversation and composition level (205 or 206) and completion of at least six credits in the same language or culture cluster (placement for course work is determined by the Educational Testing Service exam as administered by the University's Department of Modern and Classical Languages and Literatures in the following languages: French, Spanish, German, and Russian; the University also offers Portuguese and selected other languages that, with permission, could satisfy the requirement; six credits are allowed in the general education requirements for language and culture); 3) an approved internship (three to

six credits) providing international development experience during the junior or senior year (CPL 487); and CPL 495 (three credits) of an advanced-level seminar. See "Courses of Instruction" for descriptions of CPL 300, 487, and 495.

The College of the Environment and Life Sciences administers this program; interested students should contact Professor David Abedon in Community Planning and Landscape Architecture, Rodman Hall, 401-874-4655.

*Justice, Law, and Society.* Students declaring a minor in justice, law, and society must complete a minimum of 18 credits from among the courses listed below. At least three credits must be completed in each of the three groups. Several of the courses have prerequisites not included in this program; students are responsible for completing these prerequisites prior to enrolling in the course. Other courses, such as topics courses, may be approved for credit by the program coordinator. Interested students should contact Professor Leo Carroll in the Department of Sociology and Anthropology. *Criminal Justice:* HDF/SOC 437; PSC/SOC 274; PSY 254, 261, 335, 460, 465, 466; SOC 230, 370, 331, 420; SOC/PSC 426 and 476. *Law:* ECN 337, 415; ENG 356; PHL 430; PSC 288, 369, 471, 472. *Social Justice:* AAF 201; APG 311, 322; ECN 305, 381; HIS/AAF 150; HIS 328, 344, 346, 349, 352; PHL 210, 217, 314, 318; PSY 480; SOC 240, 242, 413, 428, 438; WMS 150, 310.

*Labor Studies.* The labor studies minor is available to students interested in employment issues and the problems faced by working people in the United States and abroad. Students declaring this minor are required to complete 18 credits including LRS 480, Seminar in Labor Studies. The remaining 15 credits can be selected from HIS 349, MGT 300, 321, 422 and 423; SOC 241, 336, 320, 350, and 432; PSC 369, 471, 472, and 498; ECN 338, 368, 381, and 386; and COM 460 or other courses approved in consultation with LRS faculty. The labor studies minor is administered by the Schmidt Labor Research Center. Information can be

obtained from Professor Scott Molloy in the center, Hart House, 36 Upper College Road, 401-874-2239.

*Leadership Studies.* The minor in leadership studies is based on a broad cross-disciplinary philosophy of leadership. The goal is to prepare students for leadership roles and responsibilities. The minor will provide students with opportunities to develop and enhance a personal philosophy of leadership that includes understanding of self, others, and community as well as the acceptance of responsibility inherent in community membership. The curriculum is focused on expanding students' knowledge, skills, and understanding of specific leadership theories, concepts, and models in applied settings.

The minor includes the following three areas: education which consists of exposure to leadership theories, concepts, and models; leadership training which is directed at skill areas in leadership; and developmental aspects which require academic and co-academic experiences and reflection intended to empower students to mature and develop greater levels of leadership complexity, integration, and proficiency.

To declare a minor in leadership studies, a student must first visit the Center for Student Leadership Development (CSLD) in the Memorial Union to begin the enrollment process, and then inform their major academic advisor. A member of the program's advisory committee will then be assigned to work with the student and academic advisor as a "program advisor." This program advisor will facilitate the student's process through the minor, and help assure that class, internship, and portfolio requirements are completed.

Sponsored by a program advisor from the Leadership Advisory Committee, a student must complete 18 or more credits related to leadership offered by more than one department. Requirements include: a core of nine credits as follows: 1) a choice of an introductory course (HDF 298A or HDF 298W); 2) a choice of a capstone course (MGT 402 or HDF 498C); 3) a two-credit internship with specific requirements

including conceptual understanding; skill development through experience and feedback; and personal awareness, assessment, and growth; each internship requires 80 hours of fieldwork; the specific internship course will depend on the student's particular major or depend on the specific supervisor and/or advisor for the internship site; 4) a one-credit portfolio course, which will be directed by the instructor(s) of the capstone course. The portfolios are multidimensional collections of work that reflect the students' experiences in and out of the classroom as they relate to leadership knowledge, training, and experiences. The goals of the portfolios will be discussed when a student decides to choose the leadership studies minor and will be assessed as part of the capstone experience. Each student's program advisor will work with the student on the development of the portfolio as an ongoing project. All entries should be directly related to the student's goals regarding individually desired knowledge, skill development, and experiences. Reflection is an important part of the portfolio as well. Therefore students will consider the strengths and weaknesses of their particular accumulation of skills and knowledge in each area and their assessment of how to improve their overall learning.

Students will also choose nine elective credits from the following approved courses. Other courses may be appropriate and may be added to this list with the approval of the Leadership Advisory Committee: AAF 300L; COM 101, 103, 210, 220, 302, 400, 415, 450, 460; HDF 498A, 498W; MGT 300, 301/302, 303, 306, 401, 407, 408; PHL 212; PSC 304, 369, 504; THE 221, 341; WMS 150, 310, 350T, 350Y, 350U/SOC 300P.

For more information on this minor, contact Christine Wilson in the Center for Student Leadership Development, Memorial Union, room 210, 401-874-5282.

*New England Studies.* Students who declare New England studies as a minor must take either NES 200 or 300 and elect at least one course from each of the following four

categories. *Aesthetic Dimensions*: ENG 347. *Cultural Patterns*: APG 317; ENG 337; PSC 221. *Historical Dimensions*: HIS 335, 346, 362. *Physical Dimensions*: BIO 323, BIO 418; GEO 101; NRS 301, 302. Permission can be obtained from the Committee for New England Studies to use any rotating topics course, seminar, etc., whose focus is on some aspect of New England as a substitute for any of the above courses.

*Public Relations*. Students can minor in public relations by completing one statistics course and 18 course credits from communication studies, journalism, and marketing, as specified. Applicable statistics courses are STA 220, 308, 409 and BAC 201. Communication studies majors take JOR 220, 345, JOR/PRS 340, MKT 301, and two additional MKT courses. Journalism majors take COM 210, 302, 320, MKT 301, and two additional MKT courses. Marketing majors take JOR 220, 345 and COM 210, 302, 320. Other majors take two applicable courses in communication studies, journalism, and marketing. The minor in public relations is coordinated by the Department of Journalism. Interested students should contact Professor Levin (401-874-4287) or Professor Wood (874-4030).

*Special Populations*. This interdepartmental minor gives students the opportunity to explore theory and gain practical experience through working with people who have special needs. This includes people who are handicapped (physically, emotionally, mentally, or educationally) or different (socioeconomically, behaviorally, culturally). A minimum of 18 credits may be earned by taking the required courses (HDF 200 or PSY 232; PSY 442), a minimum of three credits in supervised field experience, and a minimum of nine credits of selected electives.

Courses are chosen in consultation with an advisor from one of the participating departments: Communication Studies; Education; Nutrition and Food Sciences; Human Development and Family Studies; Nursing; Physical Education and Exercise Science; Psychology; Sociology and

Anthropology; Textiles, Fashion Merchandising, and Design; or Theatre. The College of Human Science and Services administers the program.

Interested students should contact Professor Leo O'Donnell for information.

*Thanatology*. The interdisciplinary minor in thanatology provides a basic understanding of loss, death, and grief.

Core courses are from thanatology; communications or counseling; and ethics, philosophy, or religion. While 12 of the 18 credits must be from the core areas, efforts have been made to keep the requirements as flexible as possible.

Students are required to take two courses in thanatology (6 credits); one course in communications or counseling (3 credits); and one course in ethics, philosophy, or religion (3 credits). The remaining courses (6 credits) may be selected from these and other related areas. Courses may be selected from the following list. Other courses may be approved by Professor Jean Miller in the College of Nursing. Contact her for additional information.

Thanatology: HDF 421; 471X; HPR 119, 319; NUR 360, 523, 524, 525, 526, 529; PHP 460; PSC 440; PSY 554Q.

Communications or Counseling: COM 103, 337; HDF 450.

Ethics, Philosophy, or Religion: PHL 103, 212, 314, 328, 346, 401; RLS 111, 131.

Other Related Courses: Independent study when related to death and/or grief; i.e., NUR 390, HDF 498 (check with faculty advisor). Previously approved courses taken before fall 2001 that are not listed above (CSV 302; NUR 103, 479X, 488X, 489X, 497X; HDF 221; and PHL 110X) may be used for the minor.

*Writing*. Students who declare a minor in writing must complete 18 credits from among two clusters of courses: three courses from WRT 201, 235; ENG 205A, 205B, 205C (students who major in Business may include WRT 227 among this first cluster of courses), and three courses from WRT 301, 333; ENG 305, 330.

## Marine and Environment-Related Programs

Interest in marine science and oceanography at the University dates back to the mid-1930s. Over the past three decades, this strong emphasis on marine studies has extended to environmental topics, developing into an array of undergraduate programs in the natural, physical, and social sciences.

There are more than two dozen majors with a marine or environmental focus offered by three of URI's colleges. In the College of Arts and Sciences, the majors are biological sciences, biology, chemistry and chemical oceanography, environmental plant biology (offered jointly with the College of the Environment and Life Sciences), marine biology, and physics and physical oceanography. In the College of Engineering, URI offers chemical engineering, chemical and ocean engineering, ocean engineering, civil engineering, and mechanical engineering. In the College of the Environment and Life Sciences, the majors are aquaculture and fishery technology, environmental economics and management, environmental plant biology, environmental science and management, nutrition and dietetics, geosciences, geology and geological oceanography, landscape architecture, coastal and marine policy, marine resource development, microbiology, resource economics and commerce, urban horticulture and turfgrass management, water and soil science, and wildlife conservation and biology. Several of the majors are offered jointly with the Graduate School of Oceanography.

Working with academic advisors, students can identify their majors and select the courses best suited to their individual academic objectives and career goals. A list of relevant courses appears under "Marine and Environmental Topics" in the course section.

## Preprofessional Preparation

Competition for places in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, students should consult the catalog of the professional school and then plan their undergraduate programs accordingly.

Those seeking careers as social workers can enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study, whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The Bachelor of Arts curriculum provides specific majors for those planning to become journalists or public school teachers.

**Prelaw Studies.** For students who plan professional study of law, guidance and program advice are provided by departmental advisors assigned in University College and by major advisors within various departments and colleges.

Students interested in law school should consult the *Prelaw Handbook*, prepared by the Association of American Law Schools and the Law School Admissions Council. The association finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather, it recommends that students choose their majors according to their own individual intellectual interests and "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is ... accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department, or division."

**Plan for Early Contingent Admission to the Master of Science (M.S.) Degree Program in Physical Therapy.** This plan incorporates the prerequisites for the master's degree in physical therapy in anatomy, chemistry, mathematics, physics, physiology, and psychology with bachelor's degree requirements in a related discipline during the first three years of study. With proper use of electives, students can complete all physical therapy prerequisites and first-year physical therapy courses as part of a participating B.A. or B.S. degree program.

According to this plan, application to the master's program in physical therapy may occur in the third undergraduate year. Successful applicants are selected for contingent admission to the physical therapy program at the beginning of the fourth undergraduate year, with course work taken in the fourth year applied to the B.A. or B.S. degree. A bachelor's degree and a 3.00 average in physical therapy courses are required to attain full graduate status and continue in the physical therapy program. Admission to the physical therapy program is highly competitive, and students are advised to maintain close contact with a pre-physical therapy advisor. Students interested in graduate programs in physical therapy at other institutions should consult with those institutions regarding admission requirements. Additional information concerning all admissions requirements for the program in physical therapy is available in the "Graduate Programs" section.

**Communicative Disorders.** Students who are interested in applying for the graduate program in communicative disorders, and who have not taken the undergraduate requirements, may wish to enroll as post-baccalaureate (non-matriculating) students to fulfill or begin to fulfill these requirements. The undergraduate requirements—courses needed prior to taking graduate courses—include CMD 372, 373, 374, 375, 376, 377, and 465. Completion of these courses does not, however, assure admission into the graduate program, nor is completion of all the requirements es-

sential for application to the program. Any required undergraduate courses not completed prior to graduate admission will be added to the 54-credit graduate program.

**Teacher Education Programs.** The University of Rhode Island offers a variety of academic programs leading to teacher certification at both the undergraduate and the graduate levels. Undergraduate teacher education programs are offered by departments in the College of Arts and Sciences and the College of Human Science and Services. The School of Education and Office of Teacher Education provide the coordination, planning, evaluation, and promotion of all teacher education programs at the University. The following programs are offered at the undergraduate level: early childhood education, elementary education, physical education, music education, and secondary education. To find specific program descriptions and information, refer to the index at the back of this catalog.

**Admission.** Students interested in undergraduate teacher education programs are required to apply for admission to the Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. For early childhood, elementary, secondary, music and physical education, students develop an application portfolio. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) scores on a standardized test(s) of basic skills; 4) the student's academic record, including a cumulative quality point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better. Individual departments or programs may also require an interview.

Transfer students should be advised that academic work completed at URI is a primary factor in the admission decision.

Therefore, students must complete one semester of work at the University before they can be considered for admission to the teacher education programs. This may extend the time required for degree completion.

Admission to all programs is competitive, and applicants meeting the minimum criteria described above may not be admitted because of limited space. For additional information, students should consult as early as possible with the specific department in which they wish to enroll or their University College advisor.

Students denied admission can petition for a review of the decision. In such cases, the departmental screening committee meets to consider the appeal. Only exceptional circumstances will lead the appeal committee to override the academic record criteria (2.50 cumulative quality point average and 2.50 in the academic major or specialization).

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to a teacher education program but should understand that this may delay their anticipated graduation date.

Admissions to teacher education programs at the graduate level are governed by the Graduate School in consultation with academic departments. Students with a bachelor's degree should consult this catalog's "Graduate Programs" section and departments regarding individual program requirements.

**Certification.** A teaching certificate is, for all practical purposes, a license to teach in a given state, at a specific level, and in a certain type of job. Rhode Island, like other states, requires its public elementary and secondary teachers to hold certificates to ensure that students are taught only by persons who meet specified standards of preparation, health, citizenship, and moral character.

Graduates of a state-approved teacher education program at the University are eligible to receive an initial teaching certificate in Rhode Island and in over 40 other

states through the Interstate Certification Compact (ICC). However, states will grant certification through the ICC only for certifications offered by the state. For example, a state that does not have a certification program in early childhood education (nursery school through Grade 2) will not grant a certificate in that area to a graduate of the University's program in early childhood education without reviewing the student's transcript to see if it meets that state's guidelines for elementary education. Therefore, students interested in applying for certification in states other than Rhode Island should always contact the department of education in that state and ask: 1) if the state has the area of certification the student is interested in pursuing at URI; and 2) if the state grants initial teacher certification under the ICC to students who have graduated from a Rhode Island state-approved teacher education program. Also, the student should ask the department to mail the state's application materials for certification. If the state is a member of the ICC, graduates of URI are generally entitled to initial certification for a period of five years following their date of graduation. After receiving another state's certification application, the applicant should read the directions for certification carefully and submit all required documentation.

If the state in which you are requesting certification is not a member of the ICC or does not have certification for your area of study, you should ask that state's office of teacher certification to evaluate your transcript and indicate any courses or experiences you would need for certification in that state.

**Health Professions—Premedical, Predental, and Preveterinary Programs.** The URI Health Professions Advisory Committee (HPAC) helps students preparing for medical school, dental school, veterinary school, or physician assistant programs. URI's Health Professions Advisory Committee offers students academic counseling and information on the admissions process.

Students should select their undergraduate major based on their own interests and abilities, choosing one carefully with appropriate advice from the HPAC. They should also make sure that their major provides a foundation of knowledge necessary for the pursuit of several career alternatives. It is not advisable for students to select their undergraduate majors solely or primarily to enhance their chances of being accepted by a professional school.

Students interested in any of the following programs must register with the HPAC secretary in the Biological Sciences Building, Room A-129; 401-874-2670.

**General Requirements.** For students preparing to apply to postgraduate colleges of medicine, dentistry, physician assistant, or veterinary medicine, the program of study includes courses in humanities, English and literature, basic sciences, mathematics, social sciences, and communication. These courses will fulfill basic admissions requirements. It is strongly recommended that students complete the required course work at the same time they meet undergraduate degree requirements. Any major or concentration is acceptable, provided that the minimum requirements for admission into a professional school are fulfilled. Ideally, these requirements should be substantially completed before a student takes the national admission test (MCAT, DAT, VAT, or GRE) in the spring semester of junior year. Recommended courses for fulfilling the basic admissions requirements follow, with the minimum required number of credits shown: Biology, 12 credits from the following (or their equivalents)—BIO 101, 201, 204, 302, 327, 329, 341, 352, 437, 453; MIC 211; Chemistry, 16 credits, including general inorganic chemistry (CHM 101, 102, and lab, CHM 112, 114) and organic chemistry (CHM 227, 228, 226 [lab]); Physics, 8 credits, including PHY 111, 185, 112, 186, or PHY 213, 285, 214, 286, or their equivalents; and Mathematics, 6 credits through calculus, MTH 131 and 132, or MTH 141 and 142.

*Applying to Professional Schools.* Prior to submitting an application to a professional school, each candidate's credentials are evaluated by the Health Professions Advisory Committee. By the second semester of junior year, each applicant must provide the HPAC with the following items in writing: a request from the applicant to the HPAC for a letter of evaluation in support of their application to a medical, dental, physician assistant program, or veterinary school; an official report of their SAT scores from the testing agency, high school or secondary school; official, recent academic transcripts of all college courses taken at URI and elsewhere; official reports of scores on the appropriate admission test (MCAT, DAT, VAT, or GRE) sent directly to the HPAC from the testing agency; an autobiography with a commentary on the way the applicant's career goals have developed; a description of all extracurricular activities; a description of all honors bestowed on the student; a description of volunteer hospital, dental, veterinary, or other health-related work; and a minimum of five letters of evaluation written by persons who can evaluate candidly the applicant's experience and ability to engage in professional and scientific study. A series of personal interviews with HPAC members are also held in the spring semester of junior year and included in the candidate's final evaluation. As a result of this evaluation, the HPAC determines the level at which the candidate will be recommended for admission to professional school.

*Premedical Studies.* Candidates should become familiar with their prospective medical schools' admission requirements. These are listed in "Medical School Admission Requirements," published annually by the Association of American Medical Colleges. Copies of this reference and the requirements of certain medical schools are available from the HPAC secretary. Medical schools generally require at least a 3.50 quality point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

The URI-Brown Early Identification Program for Sophomores: This plan early identifies and accepts URI students into Brown University's School of Medicine. To be eligible, you must be a Rhode Island resident who is highly motivated, exceptionally qualified, and a sophomore with a cumulative quality point average of at least 3.50 after completing at least three semesters of academic work at URI. In December of each year, eligible students must apply in writing to the URI Health Professions Advisory Committee for nomination to this program. In early February, the HPAC conducts a careful evaluation of each applicant's academic and personal qualifications. A completed application and the committee's letter of evaluation for each nominated student are forwarded to Brown's dean of medicine. Final decisions to accept applications are made by the admissions committee at Brown. Two URI students per year are usually accepted into the program. When these candidates are accepted, they assume the same status as their Brown counterparts, and continue their studies at URI. They can major in any field of study, so long as they continue to show academic excellence while completing the required premedical courses. They are also invited to take one or two of their premed courses at Brown with their future classmates, and are included in various events sponsored by the Brown Medical Student Society.

*URI Postbaccalaureate Preprofessional Programs.* Potential premedical, predental, or preveterinary candidates who already have degrees from URI or other colleges must first consult with the URI health professions advisor. The HPAC secretary will arrange for an appointment and candidates must register in writing at the secretary's office. They will be advised on completing the basic admission requirements prior to submitting an application. These students must be evaluated by the HPAC in the spring semester in order to be recommended to professional schools.

## Special Academic Opportunities

**English as a Second or Foreign Language.** English as a Second or Foreign Language is not remedial at URI. Nonnative-speaking students who want to continue to perfect their English so as to enhance their chances of success in their studies may do so by taking English Language Studies 112 and 122, two regularly offered courses that count toward the written communication requirement in the general education program. Students who need these courses are strongly urged to take them in their freshman year.

In addition to these three-credit courses, the University offers one-credit, content-based English language study sections (ELS 201), under the auspices of the English Language Fellows Project. These one-credit sections may be repeated, in conjunction with other courses, for a total of 12 times. Thus, it is possible for students who speak other languages to continue studying English, for credit, throughout their years as undergraduates. Call 401-874-4686 for more information.

**Feinstein Center for Service Learning.** The Feinstein Center for Service Learning focuses on helping students to develop, academically and personally, by providing meaningful service learning opportunities in which work within the disciplines may be put into practice. Students who participate in service learning experiences gain leadership skills, knowledge of the world in which we live, and understanding of their role in helping to shape their communities for the future. URI's Feinstein Center for Service Learning has an impact in our community through: URI 101 Traditions and Transformations, Clearinghouse for Volunteers, R.I. Reads, Feinstein Faculty Fellows, Curriculum-Based Service Learning, and the Feinstein Enriching America Program. Funded by a grant from Alan Shawn Feinstein, this provides credit and non-credit service learning opportunities for students.



*Office of Internships and Experiential Education (OIEE).* The OIEE Internship Program is an academic program that provides undergraduate students with opportunities for professional development and field study during the academic year as well as the summer. The Internship Program is specially designed for motivated students who wish to apply classroom learning to field experiences in career-related settings. Students from any undergraduate curriculum may apply for full or part-time internships and earn 9–15 free or professional elective credits.

Student interns work under the supervision of qualified professionals in carefully selected settings. The program offers students a choice of more than 600 placements that include the categories of law, counseling, government, administration, public relations, communications, alternative education, health, nutrition, marketing, management, marine affairs, environmental science, and medical research. A weekly seminar brings interns together to discuss issues that emerge during the internship.

Internships also are available for selected students in Washington, D.C. and Dublin, Ireland.

To apply for all internship programs, students must have a minimum quality point average of 2.50 and junior or senior standing. For more information, call the office at 401-874-2160.

*URI Clearinghouse for Volunteers.* This is a service that matches prospective volunteers with positions in Rhode Island's human service agencies. It gives students opportunities to explore career options and provide needed services.

**Honors Program.** The University Honors Program offers motivated students opportunities to broaden their intellectual development and strengthen their preparation in major fields of study. The program consists of courses in analytical thinking skills which prepare academically talented students to get the most from classes throughout their undergraduate years,

a colloquium that brings distinguished authorities to campus from across the nation, special tutorials in major concentrations of study, and independent research projects under the guidance of a faculty sponsor. Honors courses at the 100 and 200 levels treat general topics and usually count for general education credit in particular divisions. Those at the 300 and 400 levels are more specialized and often are used to fulfill the requirements of a major.

Students may take honors work if they meet the following standards: freshmen must have graduated in the upper 10 percent of their high school class or must submit a letter of recommendation from their high school principal or guidance counselor; sophomores, juniors, and seniors must have earned at least a 3.20 cumulative quality point average. (Under special circumstances, these eligibility requirements may be modified with the permission of the Honors Program director.)

Eligible students may participate in the Honors Program in one of two ways: they may take honors courses on an occasional basis, registering for any number or pattern of courses that interest them; or they may do honors work on a regular basis, meeting the specific requirements to receive the transcript notation "Completed the University Honors Program." In the latter case, a student must begin honors work no later than the beginning of the sophomore year and must complete a minimum of 15 honors course credits that meet the following requirements: 1) three credits at the 100 level; 2) three Honors Colloquium credits (HPR 201 or 202); 3) three credits at the 300 level (tutorial); 4) six credits at the 400 level, which may be either six credits of the Senior Honors Project (HPR 401, 402) or three credits of the Senior Honors Project (HPR 401) and three credits of the Senior Honors Seminar (HPR 411); and 5) a 3.20 quality point average for honors courses and a 3.20 cumulative quality point average.

See "Courses of Instruction" for a list of HPR courses.

### **National Student Exchange Program.**

The National Student Exchange (NSE) program offers URI students the opportunity to study at more than 170 participating colleges and universities in 55 states, U.S. territories, and Canadian provinces, paying in-state rates or URI tuition while maintaining their status as URI students. NSE offers the opportunity to explore new geographical areas, experience academic diversity, and study under different educational and social circumstances in various parts of North America. Financial aid is available to participants. For further information, contact the Office of International Education and National Student Exchange in Taft Hall.

### **New England Land-Grant Student**

**Exchange Program.** Students with special academic interests can take advantage of the talent and resources available at the region's state universities without having to become a degree candidate at another institution. Under a cooperative agreement, URI students can study for one or two semesters at the other New England land-grant institutions if they wish to take a course, a sequence of courses, or part of a program not available at URI. Students participating in this program pay their normal URI tuition and fees and maintain their status as URI students. Advisors and members of the University College staff have more information about this program and its requirements.

**Ocean Studies.** Undergraduates are encouraged to explore opportunities at the Narragansett Bay Campus for active participation in the oceanographic sciences. Juniors and seniors may spend an entire semester at the University's Bay Campus pursuing their individual marine interests, for which they receive full academic credit. They work as part of a research team in the laboratory and in the field under the direct guidance of the Graduate School of Oceanography faculty.

**Rhode Island Interinstitutional Exchange.**

Full-time students matriculated at one of the public institutions of higher education in Rhode Island may enroll for a maximum of seven credits of their full-time schedule per semester for study at one of the other public institutions at no additional expense. Each institution will determine and maintain the integrity of the degree to be awarded. Students will be subject to the course selection process applicable at the receiving institution. Summer Session and Continuing Education registrants are not covered under this program. Students interested in this arrangement should contact Enrollment Services.

**Study Abroad.** The Office of International Education and National Student Exchange sponsors University programs abroad, helps students make arrangements for foreign study, and maintains information about overseas study programs. The office also assists in the evaluation of credits from study abroad. The University sponsors exchange programs with universities in England, France, Japan, Korea, Mexico, and Germany, and URI is a member of several consortiums that enable URI students to participate in programs throughout the world. URI also participates in the New England–Quebec and New England–Nova Scotia exchange programs, making study available on an exchange basis at any of 21 English- and French-speaking universities in these Canadian provinces.

Many of these exchange programs make study abroad available to URI students at a modest cost. The study abroad director and advisors help students who wish to participate in these or other approved academic programs in choosing the appropriate programs, obtaining prior approval for courses to be taken abroad, and retaining matriculated status at URI during their absence from campus. Most forms of financial aid are applicable to study abroad. For further information, contact the Office of International Education and National Student Exchange, Taft Hall.

**Army Reserve Officers Training Corps (ROTC)**

Army Reserve Officers Training Corps (ROTC) is offered by the University and is available to all students. Physically qualified U.S. citizens who complete the entire four-year program are eligible to be commissioned as second lieutenants in the U.S. Army. Delayed entry into active service for the purpose of graduate study is available. Military science is designed to complement other instruction offered at the University. Emphasis throughout is on the development of individual leadership abilities and preparation of the student for future important leadership roles in the Army. Professional military education skills in written communication, human behavior, military history, mathematical reasoning, and computer literacy are fulfilled through required University general education courses and the military science curriculum. Three variations of ROTC are available.

During the four-year program, students participate in required military science courses and activities. Attendance at a five-week advanced training camp is required between the third and fourth year.

The two-year ROTC program begins with a five-week paid summer leadership internship called Leaders Training Course (six credits). After successful completion of LTC, the student enters the third year of ROTC and attends advanced camp during the next summer. As an alternative, an enlisted member of the Army National Guard or Army Reserve who has completed basic training can qualify for the two-year ROTC Simultaneous Membership Program.

The third variation consists of a three-year program for students who wish to enter ROTC in their sophomore year or who intend to complete their academic studies in their three remaining years. This program compresses the Basic Course requirements into one year.

All Basic Course (freshman and sophomore) military science courses are an excellent medium for personal enrichment. Significant scholarship opportunities are available for freshmen and sophomores.

Completion of the four-year military science program qualifies students to petition their college for a minor in military science.

Enrollment in any military science course allows a student to compete for off-campus training at the following U.S. Army schools: Airborne, Air Assault, Northern Warfare School, and Nurse Summer Training.

**Grades**

**Grades and Points.** Student grades are reported as A, A-, B+, B, B-, C+, C, C-, D+, D, and F. The unqualified letter grades represent the following standing: A, superior; B, good; C, fair; D, low grade, passing; F, failure; S, satisfactory; U, unsatisfactory; NW, enrolled—no work submitted.

Grades are given quality point values as follows: A, 4.00 points; A-, 3.70 points; B+, 3.30 points; B, 3.00 points; B-, 2.70 points; C+, 2.30 points; C, 2.00 points; C-, 1.70 points; D+, 1.30 points; D, 1.00 points; F and U, 0 points. P, S, and NW are not calculated in the quality point average.

Grade reports are mailed to all students at their home addresses at the end of each semester. Midsemester grade reports are mailed to all freshmen at their local addresses at the midpoint of each semester. These midterm reports are intended to alert freshmen to their academic status and to aid in advising. Midterm grades are not recorded on permanent academic records nor are they figured into quality point averages.

A grade may be reported as “incomplete” only when course work has been passing but not completed due to illness or another reason that in the opinion of the instructor justifies the report of incomplete. Undergraduate students must make arrangements with the instructor to remove the incomplete by the following midsemester. Incomplete grades not removed from an undergraduate student’s record by the end of two years will remain on the student’s permanent record.

Students are required to make up failures in required courses. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated. Students are not required to make up failures in elective courses.

Certain courses do not lend themselves to precise grading, and for these courses only S (satisfactory) or U (unsatisfactory) will be given to all students enrolled. S/U courses are labeled as such in the course descriptions in this catalog. S/U courses are not counted as courses taken under the Pass-Fail option.

**Pass-Fail Grading Option.** This plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A student above the freshman level who is not on probation may register under this plan for courses considered to be free, unattached electives by the college in which he or she is enrolled. Courses designated in the student's curriculum as degree requirements, general education requirements, and military science courses may not be included.

A student choosing to take a course under this plan must notify his or her advisor, academic dean, and the Office of Registration and Records, in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be P (pass) or F (fail). The P grade is credited toward degree requirements but not included in the quality point average. The F grade is calculated in the same manner as any other failure. A student may change from the P-F option to grade by notifying Registration and Records in writing before mid-semester.

A student may elect no more than three P-F courses a semester and no more than two P-F courses during a summer.

**Second Grade Option.** Students may exercise a second grade option by repeating a course in which the student earned a C- or lower. Only courses that fall within the student's first 30 attempted credits taken

at the University may be selected for this option. Students must exercise this option no later than the next two semesters for which the student registers after completing 30 credits. Transfer students may exercise the second grade option for courses taken during their initial semester at the University. This option must be exercised during the next two semesters for which they register after their initial semester. Only the grade earned when the course was repeated will be used in the calculation of a student's quality point average and only the credits earned for the repeated course will apply toward the graduation requirements. All grades earned for a given course shall remain on a student's permanent academic record. To take advantage of this option, students must obtain approval from their academic deans and submit the appropriate form to Enrollment Services prior to midterm of the semester in which the course is being repeated. The second grade option may be used only once per course.

## Dean's List

Undergraduate matriculated students who have achieved certain levels of academic excellence are honored at the end of each semester by inclusion on the Dean's List. The Office of Registration and Records will publish lists of students who have attained the required quality point average.

A full-time student may qualify for the Dean's List if he or she has completed 12 or more credits for letter grades and achieved a 3.30 quality point average.

A part-time student may qualify for Dean's List if he or she has accumulated 12 or more credits for letter grades and achieved a 3.30 quality point average.

## Probation and Dismissal

A student will be placed on scholastic probation if their overall cumulative quality point average falls below 2.00. For purposes of determining dismissal of part-time students, scholastic standing committees will consider an accumulation of 12 credits

as the minimum standard for one semester's work.

A student will be dismissed for scholastic reasons when he or she has a deficiency of eight or more quality points below a 2.00 average after being on probation for the previous semester. A student on probation for the second successive semester who has a deficiency of eight or fewer quality points below a 2.00 average will continue on probation. At the end of the third semester of probation, a student will be dismissed. Students who obtain less than a 1.00 average in their first semester will be dismissed automatically.

A student subject to dismissal will be so notified by the dean, after which he or she will have five days to file a written appeal with the dean.

Students are expected to be honest in all academic work. Instructors have the explicit duty to take action in known cases of cheating or plagiarism. For details, consult the *University Manual*.

## Leave of Absence

Occasionally, students are forced to take a semester or two off because of circumstances beyond their control. Others find they simply need a break from studying. For these students, taking a leave of absence might be wise. Students who have an approved leave of absence for a semester or a year may register for the semester in which they plan to return without applying for readmission. Undergraduate students can apply for a leave of absence through Enrollment Services.

## Withdrawal from the University

A student who wishes to withdraw from the University prior to the end of the semester or summer session shall do so according to procedures established by Enrollment Services. If the withdrawal process is completed satisfactorily and the student has cleared all financial obligations to the University, the date of withdrawal will be noted on the student's permanent academic record. No grades for the current semester will be recorded.

Students who withdraw from the University after the last day of classes but before a semester ends will be graded in all courses for which they are officially registered. If a student withdraws from the University after midsemester, grades will be recorded for any course that has an officially specified completion date prior to the date of withdrawal.

A student who withdraws from the University after midsemester and who seeks readmission for the next semester will be readmitted only with approval of the Scholastic Standing Committee for the college or school in which registration is desired.

## Graduation Requirements

To graduate, a student must have completed the work for, and must have achieved the minimum quality point average established by, the curriculum in which he or she is enrolled and earned at least a 2.00 quality point average. In addition, students must abide by community standards as defined in the *University Manual* and *Student Handbook*.

The work of the senior year has to be completed at the University of Rhode Island. Exceptions must be approved by the faculty of the college in which the student is enrolled.

Any student who has met the requirements for a second bachelor's degree may be granted two bachelor's degrees and issued two diplomas.

Any student who has met the requirements for two separate majors within any single bachelor's curriculum has earned a double major and may have both fields listed on his or her permanent record.

Each undergraduate college has specific procedures for student requests for exceptions to courses of study or to other degree requirements or academic rules. Undergraduate students who seek exceptions to any University rule pertaining to their academic circumstances, including degree requirements and courses of study, may contact the offices of their respective college deans.

Students who complete at least 60 credits of their work at the University are eligible to graduate with distinction.

Grades in all courses attempted at the University will be included in the calculation of the quality point average. Those who attain a cumulative quality point average at the time of graduation of at least 3.30 are recognized as graduating cum laude. Those who achieve a cumulative quality point average of at least 3.50 graduate magna cum laude, and those who attain a cumulative quality point average of at least 3.70 graduate summa cum laude.

## University Manual

University regulations governing matters such as conduct, grading, probation and dismissal, academic integrity, withdrawal from the University, and graduation requirements are fully explained in the *University Manual*. Copies of the *University Manual* are available for reference in the library and in the deans' offices. The *University Manual* is also available on the web at [www.uri.edu/facsen/MANUAL.html](http://www.uri.edu/facsen/MANUAL.html).

Such rights and responsibilities are also described in the *Student Handbook*, which is available from the Office of Student Life.

# UNDERGRADUATE PROGRAMS

The University attempts to provide students with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation.

The following undergraduate programs offered at the University of Rhode Island are presented by college.

Study options vary from the traditional liberal education to programs that are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisors, the appropriate department chairperson, or Career Services. For students who are uncertain about their career choices, the Counseling Center also offers help.







## UNIVERSITY COLLEGE AND SPECIAL ACADEMIC PROGRAMS

Jayne Richmond, *Dean*

Kandice Salomone, *Associate Dean*

Dania Brandford-Calvo, *Director,  
International Education*

Moira Keating, *Interim Coordinator, Intern-  
ships and Experiential Learning*

Winifred P. Kelley, *Academic Counselor,  
Athletes*

Dean Libutti, *Director, New Student  
Programs*

Linda Lyons, *Academic Counselor*

Sandra L. Pearlman, *Coordinator, Learning  
Assistance Center*

University College offers incoming students a broad range of advising services and the opportunity to explore the variety of courses and programs available at the University before they commit themselves to a major in a degree-granting college. All first-year students are enrolled in University College except registered nurses. Through

its strong program of academic advising by faculty, University College's purpose is to assist new students in making a smooth transition to the University and to provide special assistance, programs, and events for freshmen and sophomores.

Advisors, who have regular office hours at University College in Roosevelt Hall, are faculty members who represent each of the majors in the degree-granting colleges. Each student is assigned an academic advisor who is a specialist in the area in which the student intends to major or who has a particular interest in working with students who are undecided about their choice of major. Advisors help students select and schedule the right courses, become familiar with University procedures and programs, and obtain whatever assistance they need. They also help student-athletes.

If more students seek access to a program than can be accommodated due to limited facilities or faculty, those students who have shown the highest promise for academic success in the program will be

admitted first. Where such limitations exist, the student must apply for acceptance in the program under conditions established by the specific department or college. This applies specifically to programs that have been declared "oversubscribed" by the vice president for academic affairs. Students who cannot be admitted to the program of their first choice can request entry into another program for which they have satisfied the entrance requirements, or they can spend one or two additional semesters in University College preparing to qualify for another program.

In addition to academic advising, special academic programs include the Feinstein Center for Service Learning, the Office of Internships and Experiential Education, the National Student Exchange Program, the Clearinghouse for Volunteers, Office of International Education, and the Learning Assistance Network. For information on these and other special academic opportunities at URI, turn to page 40.

## COLLEGE OF ARTS AND SCIENCES

Winifred E. Brownell, *Dean*

Wilfred P. Dvorak, *Associate Dean*

Robert C. Bullock, *Associate Dean*

Joyce Allen Cain, *Assistant Dean for Instruction*

Jonathan L. Blaney, *Business Manager*

The College of Arts and Sciences has two main objectives: to enable all students to understand our intellectual heritage, the physical and biological world in which we live, and our social, economic, and political development; and to provide programs of professional education in selected fields as well as a strong foundation for graduate study. The college has programs of study leading to the following degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music.

For information on prelaw, pre-physical therapy, premedical, pre dental, pre-veterinary, and teacher education programs, see pages 38–40.

### Curriculum Requirements

In order to earn a degree in the College of Arts and Sciences, the student must meet requirements in three main areas: the major, Basic Liberal Studies, and electives. A description of these areas follows.

**1. The Major.** Every student is required to specialize in a particular area or discipline called the major. The requirements for each major vary from field to field, and are described in this section. Any student who has met the requirements for two separate majors within the Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, or Bachelor of Music degree programs in the College of Arts and Sciences has earned a double major and may have both fields listed on the transcript.

A student must maintain a 2.00 quality point average in his or her major to meet graduation requirements. One-half of the total number of credits needed in a given major must be earned at the University of Rhode Island.

**Curricular Modifications.** In consultation with the advisor, and with the approval of the department chairperson, a student will be permitted to modify the normal requirements of the department in which the student is majoring. The decision of the department chair is final. Requirements outside the major may be modified only with approval of the Scholastic Standing and Petitions Committee of the College of Arts and Sciences. Petition forms are available in the Office of the Dean. Minimum quality point average and total credit requirements are not petitionable.

**2. Basic Liberal Studies.** In the College of Arts and Sciences, general education requirements are called Basic Liberal Studies, and are required of all students. This series of courses is intended to ensure that students have educational experiences that will help them to become informed and responsible participants in society and contribute to the full development of their individual capabilities. The Basic Liberal Studies program embodies the philosophy and fundamental knowledge that characterizes an arts and sciences education.

The following courses are approved by the College of Arts and Sciences to fulfill Basic Liberal Studies requirements.

#### *Fine Arts and Literature*

**Fine Arts:** ARH 120, 184, 251, 252, 284, 285, 359, 364, 374; ART 101, 103, 203, 207, 215, 231, 233; COM 231; FLM 101, 201, 203; LAR 201; MUS 101, 106, 111; THE 100, 181, 351, 352, 381, 382, 383.

**Literature:** AAF 247, 248; CLA 391, 395, 396, 397; CLS 160, 250, 335; ENG 110, 160, 241, 242, 243, 247, 248, 251, 252, 260, 262, 263, 264, 265, 280, 335, 338, 355, 356, 357, 358, 366, 367, 368, 373, 381, 382; FRN 391, 392, 393; GER 392; ITL 325, 326, 391, 392, 395; RUS 325, 326, 391, 392; SPA 305, 306, 307, 308, 325, 391, 392, 393.

#### *Letters*

AAF 150; APG 327; CLS 235; COM 200, 205, 210; EGR 316; HIS 111, 112, 113, 114, 116, 117, 118, 123, 130, 132, 141,

142, 145, 146, 150, 160, 171, 172, 177, 180, 304, 305, 306, 307, 309, 310, 311, 314, 323, 327, 328, 332, 333, 340, 341, 346, 353, 354, 360, 376, 377, 381, 382, 384, 398; HPR 104, 107, 203; JOR 110; LAR 202; LET 151, 351; PHL 103, 204, 210, 212, 215, 217, 235, 314, 316, 318, 321, 322, 323, 324, 325, 328, 331, 346, 355; PSC 240, 341, 342; PSY 310; RLS 111, 125, 126, 131; WMS 220, 333.

#### *Natural Sciences*

APG 201; AST 108; AVS 101; BCH 342; BIO 101, 102, 104A, 104B, 286; CHM 100, 101, 102, 103, 105, 112, 114, 124, 191, 192; GEO 100, 102, 103, 110, 120; HPR 103, 109; MIC 102; NFS 207; OCG 110, 123, 131; PHY 109, 110, 111, 112, 140, 185, 186, 203, 204, 205, 213, 214, 273, 274, 275, 285, 286; PLS 150; TMD 113.

#### *Social Sciences*

APG 200, 202, 203, 220, 319; COM 220; ECN 100, 201, 202, 381; EDC 102, 312; ENG 330, 332; GEG 101, 104, 200; HDF 225; HPR 102, 110; LIN 200, 202, 220; MGT 110; NRS 100; NUR 150; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 204, 212, 214, 216, 224, 230, 238, 240, 242, 306, 336; WMS 150.

#### *Mathematics*

BAC 120; CSC 201; HPR 108; MTH 107, 108, 111, 131, 132, 141, 142; STA 220.

#### *English Communication*

**Writing (Cw):** ELS 112, 122; HPR 112; WRT 101, 201, 227, 235, 301, 333.

**General (C):** COM 101, 103; HPR 111; LIB 120; PHL 101.

#### *Foreign Language and Culture*

See next page.

**3. Electives.** Electives are courses not included in the Basic Liberal Studies or major requirements which students may freely select to earn the total number of credits required for graduation. Many students use their elective credits to develop a second major or a minor field of study (see page 34).

## Basic Liberal Studies Requirements

Courses used to fulfill these requirements must be selected from the list approved by the College of Arts and Sciences. Basic Liberal Studies requirements are designed only for students in the College of Arts and Sciences, but they also fulfill the University's General Education requirements.

Courses in a student's major may not be used to fulfill requirements in Fine Arts and Literature, Letters, Natural Sciences, and Social Sciences. Students completing a double major, however, may use courses from one major of their choice to fulfill these requirements.

<i>Basic Liberal Studies Requirements</i>	<i>BACHELOR OF ARTS</i>	<i>BACHELOR OF SCIENCE BACHELOR OF FINE ARTS BACHELOR OF MUSIC</i>
<b>Fine Arts and Literature</b>	6 credits (3 in Fine Arts; 3 in Literature)	6 credits (3 in Fine Arts; 3 in Literature)
<b>Letters</b>	6 credits*	6 credits
<b>Natural Sciences</b>	6 credits*	6 credits
<b>Social Sciences</b>	6 credits*	6 credits
<b>Mathematics</b>	3 credits	3 credits
<b>English Communication</b>	6 credits (3 must be in a writing course; the other 3 may be in another writing course or may be selected from the general communication courses)	6 credits (3 must be in a writing course; the other 3 may be in another writing course or may be selected from the general communication courses)
<b>Foreign Language and Culture</b>	<p><i>Choose one of the following options:</i></p> <ul style="list-style-type: none"> <li>• Two-course sequence in a language studied for two or more years in high school through at least the 103 level in a modern language or 301 in a classical language</li> <li>• Demonstration of competence through the intermediate level by examination or by successful completion of 104 in a modern language or 302 in a classical language</li> <li>• Two-course sequence in a language not previously studied (or studied for less than two years in high school) through the beginning level (101, 102)</li> <li>• Study abroad in an approved academic program in a non-English speaking country. Summer programs, including the URI in England program, will not satisfy this requirement.</li> </ul>	<p><i>Choose one of the following options:</i></p> <ul style="list-style-type: none"> <li>• Two-course sequence in a language studied for two or more years in high school through at least the 103 level in a modern language or 301 in a classical language</li> <li>• Demonstration of competence through the intermediate level by examination or by successful completion of 104 in a modern language or 302 in a classical language</li> <li>• Two-course sequence in a language not previously studied (or studied for less than two years in high school) through the beginning level (101, 102)</li> <li>• Study abroad in an approved academic program in a non-English speaking country. Summer programs will not satisfy this requirement.</li> <li>• Two courses selected from <i>within a single culture cluster</i> taken, if possible, in the same or consecutive semesters. See page 33 for a list of approved culture clusters. Six credits of a full-semester approved intercultural internship in a foreign country through the Office of Internships and Experiential Education may be substituted for a culture cluster.</li> </ul>

\* Students may use only *one course per discipline* (as identified by the course code) to fulfill requirements in Letters, Natural Sciences, and Social Sciences.



**Course Load.** No student may take more than 19 credits per semester without permission from the dean. Students on academic probation are limited to 15 credits.

**Repeating Courses for Credit.** Unless otherwise stated in the course description, a course cannot be repeated for credit. Credit can be counted only once toward the total credits required for graduation.

**Study Abroad.** Students eligible for the Study Abroad option to fulfill the Basic Liberal Studies Foreign Language and Culture requirement must enroll for full-time study in an approved academic program for one semester in a non-English speaking country. Summer programs and internships are not approved for this option. Students must successfully complete a minimum of six credits to have their requirement satisfied.

**Graduation.** It is the responsibility of the student to be familiar with University and College requirements and to file for graduation with the Office of the Dean. Deadlines for filing are as follows:

May Graduation—November 1  
August Graduation—April 1  
December Graduation—August 1

Seniors completing their final course work off campus must file a Senior Off-Campus Study Form with the Office of the Dean and should file for graduation before leaving campus.

## Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity to major in any one of 28 fields of study.

Each candidate for a B.A. degree must meet certain minimum curricular requirements in quantity and quality. These requirements include: at least 120 passed credits, with at least 42 credits in courses numbered 300 or above, and an overall quality point average of at least 2.00. In addition to meeting the requirements of the Basic Liberal Studies program, each

candidate must complete a major and a number of elective courses. The major totals 27–36 credits.

The B.A. major is the discipline or subject area in which the degree is granted. It may include not only required courses within the major department but also courses in related subjects. Students should declare this major before the end of their fourth semester.

The major comprises no fewer than 27 nor more than 36 credits. These, however, are exclusive of any credits that are outside the major department but may be required by that department as prerequisites. Including such prerequisites, the major may not exceed 39 credits.

The student may earn up to 15 credits in their major department in addition to those required for the major as identified by course code, counting as electives those credits earned in excess of the major requirements. Any credits in excess of this number in the major will not count toward the 120 credits required for graduation.

At least half of the credits in the major must be earned at URI.

*Majors include:* African and African-American studies, anthropology, art (history and studio), biology, chemistry, classical studies, communication studies, comparative literature studies, computer science, economics, English, French, German, history, Italian, journalism, Latin American studies, mathematics, music, philosophy, physics, political science, psychology, public relations, sociology, Spanish, and women's studies. (At press time, the University's College of Arts and Sciences is also pursuing approval for a B.A. degree in film and screen studies; contact the dean's office for information on its status and requirements.)

## Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

All candidates for the B.S. degree must fulfill the requirements of the Basic Liberal Studies program and complete a major of 30–45<sup>1</sup> credits within a department or program. In addition, a department may require for its major certain courses in other departments with the stipulation that this will not preclude their application to the Basic Liberal Studies program requirements. Students must earn an overall quality point average of at least 2.00. No more than 130 credits can be required in a program. At least half the credits in the major must be earned at URI. Each major within the B.S. curriculum has certain more specific requirements, as listed on the following pages.

*Majors include:* applied sociology, biological sciences, chemistry, chemistry and chemical oceanography, computer science, economics, environmental plant biology, marine biology, mathematics, physics, and physics and physical oceanography.

## Bachelor of Fine Arts

URI's Bachelor of Fine Arts curriculums provide the opportunity to discover and develop creative capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Applicants registering for work toward the Bachelor of Fine Arts degree must receive permission of their major department by arranging for an interview with a departmental representative. Further details and appointments may be obtained through Admissions.

All candidates for the B.F.A. degree are required to meet the requirements of the Basic Liberal Studies program and to earn an overall quality point average of at least 2.00. At least half the credits in the major must be earned at URI.

*Majors include:* art and theatre.

## Bachelor of Music

The Bachelor of Music curriculum is designed to prepare qualified students for careers in the field of music. Students may select one of three majors depending on their aims and abilities. Admission requirements for teacher education programs are described on page 38.

All candidates for the B.M. degree are required to meet the Basic Liberal Studies requirements and to earn an overall quality point average of at least 2.00. At least half the credits in the major must be earned at URI. Students are expected to attend department-sponsored events each semester.

*Majors include:* music composition, music education, and music performance (see page 60).

All areas provide for a good background in academic subjects, and each curriculum contains courses for the development of sound musicianship and excellence in performance. An audition conducted by members of the Music Department is required for permission to register for work toward the B.M. degree. The music education curriculum includes courses in educational psychology, conducting, methods, and a teaching internship that leads to state certification for teachers.

The total number of credits required for graduation is 128 for music composition, 131 for music education, and 128 for music performance.

## African and African-American Studies

*Faculty:* Professor Hamilton, *director*. Professors Dilworth, Okeke-Ezigbo, and Weisbord; Associate Professors Gititi and Quainoo; Assistant Professors Ferguson, Harris, Joseph, and Schwartz; Adjunct Faculty Deishinni and McCray.

The African and African-American studies program is an interdisciplinary program offered jointly by URI and Rhode Island College. Students in this program may take courses at either institution to fulfill major

requirements. The program's objective is to broaden students' intellectual and global experiences through the study of Africa and African diaspora.

Students selecting this major must complete a minimum of 30 credits including AAF 201 and 202. Six credits must be selected from each of the following areas: *history and politics* (AAF 290, 300M, 300U; AAF/HIS 150, 359, 388; AAF/PSC 380, 408, 410, 415, 466; PSC 372; WMS 351A); *arts and humanities* (AAF/ARH 330, 331; AAF/ENG 247, 248, 360, 362, 363, 364, 474); and *social and behavioral science* (AAF 300P; AAF/COM 333; COM 310A, 465). The remaining 6 credits must be chosen from courses approved for the above groups.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

A minor is also available (see page 34).

## Anthropology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in anthropology.

*Faculty:* Professor Mederer, *chairperson*. Professors Loy, Poggie, Pollnac, and Turnbaugh; Associate Professor LaVelle.

Students desiring to major in anthropology must complete a total of 30–31 credits (maximum 45 credits) in anthropology including *introductory courses*: APG 200, 201, 202, and 203 (12 credits); *methods courses*: APG 300, 302, 317, or 412 (3 to 4 credits); *theory courses*: APG 401 (3) and APG 317 or 327 (3), for a total of six credits. *Note:* APG 317 may be taken to fulfill either the methods or theory requirement, but not both. The remaining eight to nine credits may be any APG course. APG 427 is the program's **capstone** course. No more than six credits in independent study and/or field experience courses may be used toward the 30–31 credits required for the major.

It is strongly recommended that anthropology majors take at least one course in inferential statistics (e.g., STA 308 or 409), complete a foreign language

through the intermediate level, and gain computer proficiency. Early in the junior year, students who plan to go on to graduate school should meet with their advisor for curricular counseling.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Art

The Department of Art offers a Bachelor of Arts (B.A.) degree with a major in either art history or art studio, and a Bachelor of Fine Arts (B.F.A.) degree in studio.

*Faculty:* Professor Roworth, *chairperson*. Professors Calabro, Dilworth, Holmes, Klenk, Onorato, Pagh, and Richman; Associate Professor Hollinshead; Assistant Professors Hutt, Matthew and Wills; Professors Emeriti Fraenkel, Leete, Parker, and Rohm.

## BACHELOR OF ARTS

**Art History.** It is recommended that students intending to major in art history plan to complete a minimum of six credits in the history of art by the end of the sophomore year. For graduation, students must complete a minimum of 30 credits (maximum 45 credits) in art history, including ARH 251 and 252 (6). At least 12 credits must be taken from ARH 354, 356, 359, 363, 365. An additional six credits must be taken from the preceding group or one or more of the following: ARH 284, 285, 364, 374, 375. An additional six credits must be taken at the 400 level. At least three of these credits must be taken from ARH 461, 462, 480. It is recommended that students who expect to pursue graduate studies in art history take ARH 469 or 470.

It is recommended that students majoring in art history achieve intermediate-level proficiency in at least one foreign language. Students anticipating graduate study in art history may need proficiency in a second foreign language. Students are also encouraged to enroll in courses in art studio, history, literature, music, and philosophy.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 30–45 credits in art history. Students may use courses in art studio to satisfy Basic Liberal Studies requirements. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

**Art Studio.** It is recommended that students intending to major in art studio plan to complete foundation courses in the freshman year (ART 101, 103, 207, and ARH 120, section 02). For graduation, a minimum of 33 credits in art (maximum 48) must be completed, including: studio courses ART 101, 103, and 207; art history courses ARH 120, 251, 252; and one art history elective at the 200 level or above.

During the first semester of the sophomore year, all B.A. studio majors and B.F.A. candidates must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207 and ARH 120) and submit a one-page statement of purpose.

An additional six credits must be selected from one of the following sequences of studio courses: ART 213, 314; 215, 316; 221, 322; 231, 332; 233, 334; 243, 344. This sequence must be completed by the end of the junior year.

In the senior year, an additional six credits must be selected from 300- or 400-level studio courses (except 301, 309 and 310).

It is recommended that art majors elect at least three credits in the allied fields of music or theatre.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 21–36 credits in art studio and 12 credits in art history. Students may use additional approved BLS courses in art history to satisfy Basic Liberal Studies requirements. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

## BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program in art plan to complete ARH 120 in the freshman year and complete an additional three credits in art history and a minimum of 24 credits in studio by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 72 credits in art. Studio courses required of all majors include: ART 101 (3), 103 (3), 207 (3), 208 (3), either 213 or 215 (3), 405, 406 (with departmental permission) or six credits of ART at the 400 level (6). An additional 12 credits must be selected from 200-level studio courses, and an additional 21 credits must be selected from 300- or 400-level studio courses.

During the first semester of the sophomore year, all B.A. studio majors and B.F.A. candidates must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207, and ARH 120) and submit a one-page statement of purpose.

ARH 120 is required of all students, and an additional 9 credits must be selected in art history, 3 credits of which must be numbered 300 or above.

An additional 6 credits of art electives must be selected at the 300 level or above in either studio or art history.

Note: Only 3 credits from ARH 330 or 331 may be used toward the 72 credits required for the major.

A minimum of 120 credits is required for graduation, including the following: major requirements in studio (54), art history (12), and studio and/or art history electives (6). Students must meet the requirements of the Basic Liberal Studies program.

## Biological Sciences

These programs are administered by the Department of Biological Sciences. A student may earn either the Bachelor of Arts (B.A.) degree in biology or the Bach-

elor of Science (B.S.) degree in biological sciences, environmental plant biology, or marine biology. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in biological sciences.

*Faculty:* Professor Cobb, *chairperson*. Professors Bibb, Bullock, Costantino, Goldsmith, Hargraves, Harlin, Heppner, Kass-Simon, Killingbeck, Koske, and Twombly; Associate Professors J.H. Norris and A. Roberts; Assistant Professors Carrington, Forrester, Irvine, and Wilga; Adjunct Professors Blake, Sebens, Shirley, and Smith; Adjunct Associate Professors Gemma, Hammen-Winn and Thursby; Adjunct Assistant Professors Cromarty, E. Roberts and Steele; Professors Emeriti Albert, Beckman, Caroselli, Goertemiller, Goos, Hammen, Harlin, Harrison, Hauke, Hill, Hyland, Lepper, and Shoop.

## BACHELOR OF ARTS

Students selecting a major in biology must complete a minimum of 28 credits (maximum 45 credits) in biological sciences including the following courses: BIO 101 and 102 (8), and MIC 211 (4). They must also complete a minimum of three credits from each of the three lists (A, B, and C) below. The remaining nine credits can be selected from courses in biology and/or microbiology. Students in this major must elect a year of chemistry with laboratories. Those wishing to prepare for a professional career in the life sciences should enroll in the B.S. program described next.

A total of 120 credits is required in the B.A. program. At least 42 credits must be in courses numbered 300 or above.

*List A (Botanical):* BIO 311, 321, 323, 346, 348, 418, 432, 465. *List B (Zoological):* BIO 121, 201, 204, 205, 242, 244, 302, 327, 329, 331, 354, 355, 381, 382, 441, 442, 445, 446, 466, 467. *List C (Combination of Botanical and Zoological):* BIO 203, 206, 262, 341, 350, 352, 360, 437, 451, 453, 454, 455, 457, 458.

## BACHELOR OF SCIENCE

This curriculum provides a foundation in the fundamental principles of biology and marine biology, and is concerned with the application of biological science to problems of modern life. It also provides preparation for graduate work in biological fields including aquatic, environmental, and marine studies, molecular, cellular, and developmental biology, biological oceanography, genetics, limnology, and physiology, and preparation for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare a major as soon as possible to take advantage of help from department advisors. Students *must* declare their major when leaving University College.

### *Freshman Year*

#### *First semester: 15–16 credits*

Introductory biology requirement (BIO 101), CHM 101, 102 (4), math requirement (3–4), URI 101 or BIO 130 (1), and Basic Liberal Studies requirement or free elective (3).

#### *Second semester: 17–18 credits*

Introductory biology requirement (BIO 102), CHM 112, 114 (4), math requirement (3–4), modern language or elective (3), and Basic Liberal Studies requirement or free elective (3).

### *Sophomore Year*

#### *First semester: 16–17 credits*

MIC 211 (4), CHM 227<sup>2</sup> (3) or CHM 124, 126 (4), and nine credits of biology, Basic Liberal Studies, modern language, or electives<sup>3</sup>.

#### *Second semester: 17–18 credits*

Biology, Basic Liberal Studies, or electives (12–13), and the remaining chemistry requirements CHM 226<sup>2, 4</sup>, 228<sup>2</sup> (5) or BCH 311 (3).

**Biological Sciences.** A minimum of 35 credits in biology is required and must include BIO 101 and 102 (8). The remaining 27 credits must include at least one course

from List A (Botanical) and one course from List B (Zoological). At least three laboratory courses beyond BIO 102 and 101 must be taken. The 27 credits must include one course from at least four of the following six areas: Cell and Development (BIO 302, 341); Ecology (BIO 206, 262); Genetics (BIO 352, PLS 352); Molecular Biology (BIO 437); Organismal Diversity (BIO 204, 311, 321, 354, 466); Physiology (BIO 201, 242/244, 346).

In addition, students must take CHM 101, 102, 112, 114, 226<sup>2, 4</sup>, 227<sup>2</sup>, 228<sup>2</sup> or 124, 126, and BCH 311; MIC 211; two semesters of introductory calculus or one semester of calculus and STA 308; PHY 111, 112, 185, and 186 or PHY 213, 214, 285, 286; and either six credits of a modern foreign language, or study of a modern foreign language through the intermediate (104) level. The requirement for a modern foreign language is not met by study abroad or a culture cluster.

Students are encouraged to become involved in the department's research activities by arranging to register for assigned work as Special Problems (491, 492). Only three credits of 491, 492 may be used toward the B.S. degree.

*List A (Botanical):* BIO 311, 321, 323, 346, 348, 418, 432, 465. *List B (Zoological):* BIO 121, 201, 204, 205, 242, 244, 327, 329, 331, 354, 355, 381, 382, 441, 442, 445, 446, 466, 467. *List C (Combination of Botanical and Zoological):* BIO 203, 206, 262, 341, 350, 352, 360, 437, 451, 453, 454, 455, 457, 458.

Students are strongly urged to consult the biological sciences advisors to obtain detailed programs of the various sub-disciplinary paths through the department most suited to their particular career goals.

A total of 130 credits is required for graduation.

**Environmental Plant Biology.** The environmental plant biology program is jointly offered by the Department of Biological Sciences in the College of Arts and Sciences and the Department of Plant Sciences in the College of the Environment

and Life Sciences. A minimum of 31 credits is required including BIO 102 (4); BIO/PLS 107 (1); PLS 205 (4); BIO 262 (3); BIO 323 (4) or BIO 311 (3) or BIO 321 (3); BIO/PLS 332 (4) or BIO 432 (4) or BIO 465 (3); PLS 250 (4) or BIO 352 (3) or PLS 352 (3); BIO 346 (3) or PLS 476 (3).

In addition, students are required to take a minimum of 9–11 credits of 300- and 400-level courses in the major. Students will be encouraged to specialize in one of three concentration areas that have been identified as strengths in both departments: biology of plant communities, symbiology, or plant molecular biology. Lists of suggested courses for each concentration area are listed below. Students with more general or more specific interests in other areas of plant biology may develop their own concentration program (at least 9–11 credits) with an advisor. The Arts and Sciences Dean's Office must be notified of such individual program requirements.

### *Specialization in Biology of Plant*

*Communities:* 9–11 credits selected from BIO 321 (3), BIO 418 (3), BIO 524 (3), NRS 212 (3), NRS 301 (3), PLS/NRS 475 (4), PLS 476 (3).

*Specialization in Symbiology:* 9–11 credits selected from BIO 432 (4); BIO/MIC 453 (4); ENT 385, 386/BIO 381, 382 (4); PLS 463 (3); PLS 472 (3); PLS 511 (3).

### *Specialization in Plant Molecular Biology:*

9–11 credits selected from BCH 312 (2), BIO 437 (3); BIO 453 (4); PLS 471 (3), PLS 472 (3), PLS 511 (3).

Students majoring in environmental plant biology must also complete CHM 101, 102, 112, 114, 124, and 126; BCH 311; MIC 211; BIO 101; MTH 131 (a second course in mathematical sciences is recommended); PHY 109, 110 or PHY 111, 185; PHY 112, 186. Students will satisfy the general education requirements of their chosen college, either Arts and Sciences or Environment and Life Sciences. A modern language is recommended.

A total of 130 credits is required for graduation.

**Marine Biology.** A minimum of 29 credits in biological sciences is required and must include BIO 101 or 205; BIO 102; and BIO 130. Of the remaining 21 credits, 12 credits must be earned by selecting one course from at least four of the following six areas: Cell and Developmental Biology (BIO 302, 341); Ecology (BIO 206, 262); Genetics (BIO 352, PLS 352); Molecular Biology (BIO 437); Organismal Diversity (BIO 311, 321, 354); Physiology (BIO 201, 346). The remaining nine credits must be selected from the following, with no more than three credits of Special Problems to be applied to this requirement: BIO 345, 350, 354, 355, 360, 418, 441, 455, 457, 458, 465, 491, 492, 541. Students must take at least three laboratory courses in biological sciences (BIO) in addition to BIO 101 and 102 and excluding BIO 491 and 492.

In addition, the student must take CHM 101, 102, 112, 114, and either CHM 226<sup>4</sup>, 227, and 228 or CHM 124, 126, and BCH 311; two semesters of introductory calculus or one semester of calculus and STA 308; MIC 211; OCG 401 or 451; PHY 111, 112, 185, 186, or 213, 214, 285, 286; and either six credits of a modern foreign language, or study of a modern foreign language through the intermediate (104) level. The requirement for a modern foreign language is not met by study abroad or a culture cluster.

A total of 130 credits is required for graduation.

## Chemistry

The Department of Chemistry offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in chemistry.

*Faculty:* Professor Euler, *chairperson*. Professors C. Brown, Dain, Fasching, Fisher, Freeman, Kirschenbaum, W. Nelson, W. Rosen, Vittimberga, and S. Yang; Associate Professors Oxley and Smith; Assistant Professors Lucht and Major;

Professors Emeriti Abell, P. Brown, Cheer, Cruickshank, Goodman, MacKenzie, Rosie, and Traficante.

## BACHELOR OF ARTS

Students in this program must complete a minimum of 31 credits (maximum 45) in chemistry by taking either 10 credits as CHM 191, 192 or 8 credits as CHM 101, 102, 112, 114; and 20 credits as CHM 212, 291, 292, 335, 431, and 432. One additional course must be chosen from CHM 401, 412, 427, or 441. CHM 226, 227, 228 may be substituted for the 291, 292 sequence. CHM 191 can be substituted for CHM 101 and 102. CHM 229 and 230 (which are offered through ASFCCE), may be substituted for CHM 226.

MTH 141 and 142 and one year of physics (PHY 111, 112, 185, and 186, or PHY 203, 204, 273, and 274) are required. (The PHY 111, 112, 185, and 186 sequence is preferred in the B.A. program.)

A total of 120 credits is required for the B.A. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, biochemistry, and inorganic chemistry. Those who complete this curriculum are prepared to practice as a chemist, pursue graduate studies in chemistry, or enroll in a professional school in a related area such as medicine, dentistry, or pharmacy. Preprofessional studies can be focused through the use of electives.

Students wishing to complete a degree program accredited by the American Chemical Society Committee on Professional Training of Chemists must take CHM 441 in addition to the courses listed below. Graduates who take CHM 441 receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of

chemistry. It is strongly recommended that WRT 101 or 201 be taken in the freshman year. CHM 425, 427 should be taken in the junior year by students planning research or advanced course work in organic chemistry. Six credits of "curriculum requirements" shall include either CHM 353, 354 or any 500-level courses with department approval.

B.S. students desiring the American Chemical Society option in chemistry/biochemistry must take BCH 481, 482 or BCH 581, 582. Six additional credits in undergraduate research (either CHM 353 and/or 354) are also required to satisfy requirements for advanced laboratory. CHM 353, 354 will be supervised by faculty with expertise in biochemistry. Students electing the chemistry/biochemistry option may wish to take additional courses in molecular biology as electives.

A total of 130 credits is required for the B.S. degree.

### *Freshman Year*

*First semester: 17 credits*

CHM 191 (5) (or CHM 101, 102), MTH 141 (4), language or free elective (3), Basic Liberal Studies requirements (5–6).

*Second semester: 17 credits*

CHM 192 (5) (or CHM 112, 114), MTH 142 (4), language or free elective (3), Basic Liberal Studies requirements (5–6).

### *Sophomore Year*

*First semester: 18 credits*

CHM 291 (4) (or CHM 227), CHM 212 (4), MTH 243 (3), PHY 203, 273 (4), language or Basic Liberal Studies requirements (3).

*Second semester: 17 credits*

CHM 292 (4) (or CHM 228, 226<sup>4</sup>), MTH 244 (3), PHY 204, 274 (4), language or Basic Liberal Studies requirements (6).

### *Junior Year*

*First semester: 14 credits*

CHM 431 (3), 335 (2), physics elective (3) (PHY 205, 275 [4] recommended), Basic Liberal Studies requirement (3), free elective (3).

*Second semester: 17 credits*

CHM 432 (3), 412 (3), 414 (2), Basic Liberal Studies requirements (6), free elective (3).

*Senior Year*

*First semester: 16 credits*

CHM 401 (3), 425 (2), 427 (3), curriculum requirements (3–6), free electives (3–5).

*Second semester: 15 credits*

CHM 492 [capstone] (1), 402 (2), 441 (3), free electives (9).

## Chemistry and Chemical Oceanography

The Department of Chemistry and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in chemistry and chemical oceanography. The faculty consists of the members of the department and the GSO's chemical oceanography faculty.

*Coordinator:* Professor Euler (Chemistry).

The program is designed to prepare students for careers in chemistry or chemical oceanography. This curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, inorganic, and oceanographic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree in chemistry or in chemical oceanography, to teach, or to enter specialized fields in development, control, technical sales, and research in the chemical or oceanographic industries.

Students wishing to complete a degree program accredited by the American Chemical Society Committee on Professional Training of Chemists must take CHM 441 in addition to the courses listed below. Graduates who take CHM 441 receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or WRT 201 be taken in the freshman year.

A total of 130 credits is required for graduation.

*Freshman and Sophomore Years* follow the same program as B.S. in chemistry (see previous).

*Junior Year*

*First semester: 14 credits*

CHM 431 (3), 335 (2), OCG 451 (3), Basic Liberal Studies requirement (3), free elective (3).

*Second semester: 15 credits*

CHM 432 (3), OCG 494 (3), Basic Liberal Studies requirements (6), free elective (3).

*Senior Year*

*First semester: 16 credits*

CHM 401 (3), 425 (2), 427 (3), OCG 493 (3), free electives (5).

*Second semester: 17 credits*

CHM 412 (3), 414 (2), OCG 521 (3), free electives (9).

## Classical Studies

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in classical studies.

*Faculty:* Associate Professor Suter, *section head*.

Students selecting classical studies as a major must complete a minimum of 30 credits. Twenty-four of the 30 credits must be in Latin and Greek (only six credits of either LAT 101, 102, or GRK 101, 102 may count toward the required 24 credits) as follows: a) a minimum of six credits in each language (12); b) the balance of 12 credits in either or both language(s) (12). The remaining six credits must be from the following: ARH 354; CLA 391, 395, 396, 397; HIS 300, 303; PHL 321 (6).

Certification in secondary education in Latin is available through the Department of Education.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Communication Studies

The Department of Communication Studies offers the Bachelor of Arts (B.A.) degree in communication studies.

*Faculty:* Professor S. Wood, *chairperson*. Professors Brownell, Chen, Devlin, Doody, Grubman-Black, Ketrow, Mundorf, Silvia, and Swift; Associate Professors Leatham, Quainoo, and Salazar; Assistant Professors Derbyshire, McClure, and Reed; Director of Debate J. Devine; Instructors S. Brown, Conlon, Maar, L. McClure, August, Nelson, and Wales.

URI's program in communication studies provides maximum flexibility in planning for a variety of academic and occupational goals. The curriculum is personalized for each student. Although the student will play an important role in curriculum planning, his or her program is closely supervised by the advisor. Specific curricular, extracurricular, and internship programs are planned as integral parts of each student's program. Departmentally approved courses provide diversity or a more focused approach, depending on the student's needs and goals. Courses outside the department that relate to the student's needs and goals are also encouraged.

Courses in communication studies can count toward a minor in public relations when taken in conjunction with specific journalism and marketing courses.

Students selecting this major may pursue studies in business and professional communication, communication theory, oral interpretation, rhetoric and public address, public relations, radio and TV advertising, and similar career goals.

The program requires a minimum of 36 credits (maximum 51) in the major, including COM 101, 103, 206, and 306. The remaining 24 credits will be distributed as follows: at least two courses at the 200 level (excluding 216); three courses at the 300 level; and three courses at the 400 level (excluding COM 471, 472 and 491, 492). The student and an advisor will design an appropriate selection of courses.

Communication studies majors interested in a communication/music-related career may complete a second major in music. Contact Professor Wood for more information.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Comparative Literature Studies

The Department of English and the Department of Modern and Classical Languages and Literatures offer jointly the Bachelor of Arts (B.A.) degree with a major in comparative literature studies.

*Coordinator:* Professor Manteiga (Modern and Classical Languages and Literatures).

The choice of courses in a student's major and in the area of special interest must have both sufficient range (genre, period, and at least two literatures) and a specific focus. It must be approved by an advisor and filed with the dean's office.

Students in the comparative literature studies program fulfill the Basic Liberal Studies Fine Arts and Literature requirement by taking three credits each in Fine Arts and in Literature over and above their major literature requirements.

Students must complete a minimum of 30 credits in one of the following options.

**English and One Foreign Literature in the Original Language.** Nine credits in English and/or American literature, 300 level or above; nine credits in one foreign literature; three credits in literary theory or criticism (CLS 350). The remaining credits are to be taken from the comparative literature core courses or the literature courses in English or Modern and Classical Languages and Literatures departments.

**Two Foreign Literatures in the Original Language.** Nine credits in each of two foreign literatures; three credits in literary theory or criticism (CLS 350). The remaining courses are to be taken from the comparative literature core courses or the literature courses in the English or Modern and Classical Languages and Literatures departments.

## World Literature in English Translation.

Three credits in the nature of language from APG/LIN 200 or APG/LIN 220; three credits in literary theory or criticism (CLS 350); at least one foreign literature in translation course. In addition, the student must take 12 credits in a language beyond the 102 level. The remaining credits are to be taken from the comparative literature core and/or literature courses offered by the English and Modern and Classical Languages and Literatures departments.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Computer Science

The Department of Computer Science and Statistics offers the Bachelor of Arts (B.A.) and the Bachelor of Science (B.S.) degree in computer science. The department also co-sponsors the B.S. in computer engineering (described in the College of Engineering section). In addition, the department offers the Master of Science (M.S.) degree in computer science and the Doctor of Philosophy (Ph.D.) in applied mathematical sciences with a specialization in computer science.

URI also offers a 24-credit minor in computer science (see next page).

*Faculty:* Associate Professor Kowalski, *chairperson*. Professors Carrano and Lamagna; Associate Professors Baudet, Fay Wolfe, Peckham, and Ravikumar; Assistant Professors DiPippo and Hervé; Adjunct Associate Professor Strauss; Adjunct Assistant Professors Durfee, Encarnaç o, and Hamel; Professor Emeritus Carney.

## BACHELOR OF ARTS

Students in the B.A. curriculum must complete a minimum of 36 credits as follows: CSC 110 (4), 211 (4), 212 (4), 301 (4), 305 (4), 320 (4); one of 411 or 412 (4); two of 402, 411, 412, 436, or 481 (8). Also required are MTH 141 (4) and 215 (3); one COM course (3); and two WRT courses from among WRT 101, 201, 301, or 333 (6).

A total of 121 credits is required for graduation; at least 42 of these credits must be at the 300 level or above.

## BACHELOR OF SCIENCE

The curriculum is designed to provide a broad introduction to the fundamentals of computer science including software and systems, programming languages, machine architecture, and theoretical foundations of computing. The required mathematics preparation provides a basis for advanced work. Students will be well prepared for careers or graduate study in computer science.

Students in the B.S. curriculum must complete a minimum of 56 credits as follows: CSC 110 (4), 211 (4), 212 (4), 301 (4), 305 (4), 340 (4), 411 (4), 412 (4), 440 (4), 499 (8); 12 additional credits chosen from CSC 320 (4), 350 (4), 402 (4), 406 (4), 415 (4), 436 (4), 445 (4), 481 (4), including either CSC 350 or 445.

Students also complete MTH 141 (4), 142 (4), 215 (3), 243 (3); PHY 203, 273 (4), 204, 274 (4) or PHY 213, 285 (4), 214, 286 (4); one COM course (3); and two WRT courses from among WRT 101, 201, 301, or 333 (6).

Students majoring in computer science who leave URI and are subsequently readmitted must follow the computer science curriculum requirements in effect at the time of their readmission, unless an exception is granted by the department chairperson and approved by the dean.

A total of 129 credits is required for graduation. A possible course of studies follows.

*Freshman Year*

*First semester: 15 credits*

CSC 110 (4), MTH 141 (4), URI 101 (1), WRT 101 (3), Basic Liberal Studies requirements or electives (3).

*Second semester: 17 credits*

COM 101 (3), CSC 211 (4), MTH 142 (4), Basic Liberal Studies requirements (3), electives (3).

*Sophomore Year**First semester: 17 credits*

CSC 212 (4), MTH 243 (3), PHY 203, 273, (4), Basic Liberal Studies requirements or electives (6).

*Second semester: 17 credits*

CSC 301 (4), MTH 215 (3), PHY 204, 274, (4), WRT 333 (3), Basic Liberal Studies requirements or electives (3).

*Junior Year**First semester: 15 credits*

CSC 305 (4), 411 (4), CSC elective (4), Basic Liberal Studies requirement (3).

*Second semester: 15 credits*

CSC 340 (4), 412 (4), CSC elective (4), Basic Liberal Studies requirement (3).

*Senior Year**First semester: 17 credits*

CSC 440 (4), 499 (4), Basic Liberal Studies requirement (3), electives (6).

*Second semester: 16 credits*

CSC 499 [**capstone**] (4), CSC elective (4), electives (8).

**MINOR IN COMPUTER SCIENCE**

Students declaring a minor in computer science must earn 24 credits including CSC 211 (4), 212 (4), 301 (4), and two other CSC courses at the 300-level or above. In addition, students are expected to complete MTH 141.

**Economics**

The Department of Economics offers a Bachelor of Arts (B.A.) and a Bachelor of Science (B.S.) degree in economics.

*Faculty:* Professor Ramstad, *chairperson*. Professors H. Barnett, Burkett, Lardaro, McIntyre, Mead, C. Miller, Ramsay, Sharif, and Starkey; Associate Professor Suzawa.

**BACHELOR OF ARTS**

Students selecting this field must complete a minimum of 33 credits (maximum 48) in economics, including ECN 201 and

202 (6), 305 and 306 (6), 327, and 328 (6), and 445 (3).

In addition, at least 12 credits must be completed from economics courses numbered 300 or above. Students may substitute up to six credits from other departments; three credits from statistics—BAC 201 (3), 202 (3), STA 308 (3), 409 (3), or 412 (3)—and three credits from another related course approved by the department chairperson. These substitutions must be filed with the Office of the Dean. Students planning to do graduate work in economics are encouraged to take ECN 375, 376 and at least one semester of statistics.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**BACHELOR OF SCIENCE**

Students in this curriculum may elect one of two options, *applied economics* or *economic theory and methods*, and must inform the dean's office of the option.

**Applied Economics.** A minimum of 31 credits in economics including ECN 201, 202, 305, 327, 328, 375, 376, and 445. In addition, students must complete COM 101; BAC 202 or MTH 451 or STA 308.

**Economic Theory and Methods.** A minimum of 31 credits in economics including ECN 201, 202, 305, 327, 328, and 376. In addition, students must complete MTH 141, 142, 215, 243, 307, and 435. This option is recommended for students preparing for graduate study in economics.

A total of 120 credits is required for graduation.

**English**

The Department of English offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) in English. The Department of English offers (with the Department of Modern and Classical Languages and Literatures) the B.A. degree with a major in comparative literature studies (see previous page).

*Faculty:* Professor Donnelly, *chairperson*. Professors Arakelian, Campbell, Dvorak, Kunz, Leo, Neuse, Okeke-Ezigbo, Pearlman, Schwegler, Seigel, Shamoon and Stein; Associate Professors Cappello, Cook, Gititi, Martin, Reaves, Reynolds, Swan, Vaughn, and Walton; Assistant Professors Barber, Karno, Mandel, Mensel, Miles, Scheil, and Trimm.

Students selecting this field must complete a minimum of 36 credits (maximum 51), 18 of which must be at the 300 level or above. All students must complete ENG 201 and 202 (6 credits). The remaining 30 credits must include one course from each of the following five periods (15 credits): *pre-1500* (ENG 251, 366, 367, 368, 381, 382); *1500–1660* (ENG 241, 251, 280, 373, 382, 472); *1660–1800* (ENG 241, 251, 374, 480, 482); *19th century* (ENG 241, 242, 252, 347, 348, 375, 448); *20th century* (ENG 242; ENG/AAF 248; ENG 252, 348; ENG/AAF 362, 363, 364; ENG 378, 383, 446, 447, 448, 469).

In addition, students must select a 12-credit focus area by completing a capstone course (marked below) and 9 additional credits in one of the following focus areas: *identity studies* (ENG/AAF 247, 248; ENG 260, 337, 338; ENG/AAF 363, 364; ENG 385, 387, 495 [**capstone**]); *genre studies* (ENG 243, 262, 263, 264, 265, 300, 304, 336, 339; ENG/AAF 362; ENG 446, 447, 448, 469, 496 [**capstone**]); *creative or professional writing and publishing studies* (ENG 205A, 205B, 205C, 305, 330; WRT 201, 235, 301, 333; ENG/WRT 497 [**capstone**]); *cultural studies with period emphasis* (ENG 302, 332, 347, 348; ENG/CLS 350; ENG 351, 374, 375, 474, 498 [**capstone**]), or any one 300- or 400-level course approved for one of the five periods. The remaining 3 credits may be selected from any ENG course. No course may be used to fulfill more than one requirement.

Note: Freshmen are not admitted to 300- or 400-level courses without permission of the instructor. Sophomores are discouraged from taking 100-level courses.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.



## Film and Screen Studies

The URI Film Studies Committee is in the process of securing approval by the Rhode Island Board of Governors to offer this Bachelor of Arts degree at URI's Kingston Campus. This interdepartmental program would draw on faculty expertise from a number of academic departments to offer students a broad interdisciplinary approach to the aesthetic, literary and cultural study of film. For information on the degree and its requirements, contact Program Director Dr. Gerald DeSchepper or the dean's office in the College of Arts & Sciences (if off-campus, call the University to be directed at 401-874-1000).

The University also offers an 18-credit minor in film studies; see page 34 for more information.

## French

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in French.

*Faculty:* Professor Morello, *section head*. Professor K. Rogers; Associate Professor Hammadou; Assistant Professors Durand and Erickson.

Students selecting this field are required to complete at least 30 credits (maximum 45) in French, not including FRN 101, 102, 391, 392, 393. They must take three credits from FRN 412, 473, or 474. Students must also complete a minimum of three additional FRN credits at the 400 level.

Additionally, students with proven competence in French language and literature, with permission of the advisor, section head, department chairperson, and dean of the college, may take courses toward their concentration in related fields such as history, linguistics, art, or philosophy. Approval must be filed with the Office of the Dean.

Students in the French International Engineering Program may use three credits of French literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this

program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## German

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in German.

*Faculty:* Associate Professor Hedderich, *section head*. Professor Grandin; Associate Professor Kirchner; Assistant Professor von Reinhart; Visiting Assistant Professor Rarick.

Students selecting this major complete at least 30 credits (maximum 45) in German, not including GER 101, 102, or 392. Students must complete six credits in literature, at least three of which must be taken at the 400 level, and must complete one additional 400-level German course. Students in the International Engineering Program must complete GER 411.

Students in the IEP may use three credits of German literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## History

The Department of History offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) degree in history.

*Faculty:* Associate Professor Honhart, *chairperson*. Professors J.A. Cohen, Klein, Strom, Thurston, and Weisbord; Associate Professors George, Mather, Pegueros, Rollo-Koster, and Schwartz; Assistant Professors Ferguson, Joseph, Rusnock, and Sterne; Adjunct Associate Professor Klyberg; Professor Emeriti Briggs, Findlay, Gutchen,

and Kim; Assistant Professor Emeritus Silvestri.

Students selecting this field must complete a minimum of 30 credits (maximum 45) in history, including a minimum of six and a maximum of 12 credits in courses numbered 100 to 299. The balance of required credits is in courses numbered 300 or above, including (1) HIS 401 or 441 or 481 and (2) HIS 495. When possible, the two 400-level courses should be taken in consecutive semesters with the same instructor. Under unusual circumstances, with permission of the department chairperson, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper.

Undergraduates wishing to take courses on the 500 level must secure the permission of the chairperson.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**Capstone** courses in this major are HIS 401, 441, 481, and 495.

## Italian

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Italian.

*Faculty:* Professor Trivelli, *section head*. Professor Viglionese; Assistant Professor Sama.

Students selecting this major must complete at least 30 credits (maximum 45), not including ITL 101, 102, 391, 392, or 395. ITL 325, 326 are required.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Journalism

The Department of Journalism offers the Bachelor of Arts (B.A.) degree.

*Faculty:* Professor Levin, *chairperson*. Professor Luebke; Lecturer Pantalone; Instructors Bordeleau, Gray, and Lord; Adjunct Assistant Professor Ward.

The study and practice of journalism require the acquisition and application of a broad base of knowledge. Therefore journalism majors at URI pursue a professional course of study that is strongly grounded in the liberal arts. Along with Basic Liberal Studies and elective courses from other disciplines, the major requires students to explore the concepts and practices of contemporary American journalism. Within a social, historical, legal, and ethical context, students acquire skills in gathering and synthesizing factual information and communicating it clearly to a variety of audiences. Journalism course work, through individual and collaborative assignments, focuses on reporting, writing, editing, and producing news for publication or broadcast.

Students who choose journalism as a minor can focus on public relations or media issues, print or broadcasting. For students majoring in other fields, the department offers courses that provide a forum on the role of mass media in society.

Students majoring in journalism must complete a minimum of 30 credits (maximum 45) in journalism. All journalism majors must complete JOR 115, 220, 310, and 410. In addition, students must select nine credits from skills courses: JOR 230, 320, 321, 330, 331, 340, 341, 342, 420, 441; and three credits from conceptual courses: JOR 210, 211, 311, 313, 415. Any journalism courses may be chosen for the remaining six credits. Students are encouraged to consult with their advisors about the mix of journalism courses that best meets their goals.

Journalism majors must fulfill some of their Basic Liberal Studies requirements by choosing from the following list of courses. The department has identified these courses as important preparation for students to both study and practice journalism.

*Fine Arts and Literature:* ARH 120 or MUS 101 or THE 100 and ENG 160 or 241 or 242 or 251 or 252 or 280. *Letters:* HIS 142 or 341 or 354 and PSC 240 or 341 or 342 or PHL 103 or 204 or 217. *Natural Sci-*

*ences:* BIO 101 or 102, 104A or 104B or CHM 101 and 102 or GEL 103 or PHY 111 and 185 or PHY 112 and 186. *Social Sciences:* PSC 113 or 116 or 201 and SOC 240 or 242 or 336 or WMS 150. *Communication Skills:* PHL 101.

The only journalism courses open to freshmen are JOR 110 (for nonmajors), 115 (for majors), and 220. Journalism majors are urged to concentrate on their Basic Liberal Studies requirements during their freshman and sophomore years. In addition to the aforementioned required courses, other BLS courses are recommended as useful for journalism majors. Students should consult with their advisors about complete Basic Liberal Studies requirements and about other courses that meet their individual goals.

Students must earn a grade of C or better in a "skills" course (including JOR 220) to enroll in the next-level course. Only three credits of JOR 220 may be used to satisfy graduation requirements.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Students majoring in journalism are also encouraged to pursue a minor. The Department of Journalism, in conjunction with the departments of Communication Studies and Marketing, has developed a minor in public relations.

## Latin American Studies

The Departments of Sociology and Anthropology, History, and Modern and Classical Languages and Literatures offer a Bachelor of Arts (B.A.) degree in Latin American Studies (LAS).

*Faculty:* Associate Professor Morín, *LAS committee chairperson.* *Committee members:* Professors McNab and Poggie; Associate Professors Gititi and C. White; Assistant Professor Pegueros. (Some Arts and Sciences faculty members not listed here offer courses that can fulfill the requirement for this B.A.)

Students selecting this field must complete a minimum of 36 credits as follows: APG 315, HIS 381, 382, and one additional history course dealing with the major; six credits in Spanish or Portuguese from the approved list; LAS 397; PSC 201; ECN 363; and nine credits of electives from the approved list of courses.

Students must file their program of study with the dean's office.

Credits leading to this B.A. may also be taken at foreign universities or other universities in the U.S. that offer programs in Latin American studies with the approval of the LAS Committee, as long as 15 credits in the major are taken at URI. Students are highly encouraged to participate in study abroad programs in Latin America.

A list of courses acceptable for this program can be found in "Courses of Instruction." Courses not listed are not necessarily excluded from this program, provided that the subject matter deals in some way with Latin America. The Latin American Studies Committee must approve the student's program including any course substitutions.

The LAS Committee will assist students in the formulation and approval of their programs. The current coordinator is Thomas Morín, associate professor of Hispanic studies in the Department of Modern and Classical Languages and Literatures.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Linguistics

Admission to the B.A. program in linguistics is currently suspended.

The Department of Modern and Classical Languages and Literatures offers a number of undergraduate courses in linguistics. The minor in linguistics is still available.

*Faculty:* Professor K. Rogers, *section head.*

## Mathematics

The Department of Mathematics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

For information on URI's minor in mathematics, see the end of this section.

*Faculty:* Professor Pakula, *chairperson*. Professors Beauregard, Clark, Datta, Finizio, Grove, Kaskosz, Ladas, Lewis, Montgomery, and Suryanarayan; Associate Professors Eaton, Liu, Thoma, and Merino; Assistant Professors Kook, Kulenovic, Thoma, and Wu; Professors Emeriti Driver, Fraleigh, Roxin, Schwartzman, and Verma; Assistant Professor Emeritus Barron.

### BACHELOR OF ARTS

Students in the B.A. curriculum may tailor a program to suit their individual needs and interests. They should meet with their advisor no later than the end of the first semester of the sophomore year to plan a complete program. This program, and any subsequent changes in it, must be approved by the advisor and the department chairperson. It must contain at least 32 credits (maximum 45) in mathematics, and include MTH 141, 142, 215, 243, and 316, plus 15 or more additional credits in mathematics, at least three credits of which should be at the 400 level.

MTH 107, 108, and 111 may not be taken by students majoring in mathematics.

A total of 120 credits is required in the B.A. curriculum. At least 42 of these must be in courses numbered 300 or above.

### BACHELOR OF SCIENCE

Students in the B.S. curriculum may elect either the general program or the applied mathematics option. The Office of the Dean must be informed of any substitutions.

**General Program.** This program stresses basic theories and techniques, and includes an introduction to the principal

areas of mathematics. It is recommended for students considering graduate study in mathematics. Students in this program must complete MTH 141, 142, 215, and 243. These courses should normally be taken in the freshman and sophomore years. Students must complete an additional 27 credits in mathematics, including MTH 316, 425, 435, 436, and 462. MTH 107, 108, and 111 may not be taken by students majoring in mathematics. The student must take CSC 211 and 212.

**Applied Mathematics Option.** This program is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm or with a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work. Although a theoretical foundation is developed, the applications are emphasized. The student must take MTH 141, 142, 215, and 243, preferably by the end of the sophomore year. The student must complete MTH 435, 436 or 437, 438, and also CSC 211, 212. In addition, the student must select nine credits from Group I (Mathematics), and nine credits from Group II (Applications).

*Group I:* MTH 244, 316, 322, 418, 441, 442, 444, 447, 451, 452, 461, 462, 471, and 472. Other courses may be used for this group with prior permission of the chairperson. *Group II:* BIO 460; CSC 301, 350, 411; ECN 323, 324, 375, and 376; ELE 210; IME 432, 433; MCE 262, 263; PHY 322, 331, 341; STA 409, 412. Other courses may be used for this group with prior permission of the chairperson.

Both B.S. programs require 130 credits for graduation.

### MINOR IN MATHEMATICS

Students declaring a math minor must earn credit for MTH 141, 142, 243, or MTH 131, 132, 244; MTH 215; and two three-credit math courses chosen from MTH 307, 316, 322, or any 400-level

course. At least one of these two courses must be at the 400 level. Substitutions may be made with permission of the chairperson.

## Military Science (Army ROTC)

The Department of Military Science conducts the Reserve Officer Training Corps (ROTC) program for students desiring to earn commissions as officers in the U.S. Army. Students must complete the equivalent of eight semesters of military science subjects. Completion of the four-year military science program qualifies students to petition their academic college for a minor in military science. Participation in the program during the first two years (freshman and sophomore) is without any obligation to the military unless the student is on a scholarship contract. Students can enter the program as freshmen or sophomores and in exceptional cases approved by the chairperson, as juniors. After completing University degree and department requirements, students are eligible to be commissioned as second lieutenants in the United States Army in either the Active Army, Army Reserve, or National Guard.

*Faculty:* Professor Krajewski (Lt. Col., U.S. Army), *chairperson*. Assistant Professors Bajcz, Brooks, Johnson, and Stauffer.

## Modern and Classical Languages and Literatures

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree in classical studies, French, German, Italian, and Spanish (described in alphabetical order), as well as minors in linguistics and Portuguese, and courses in Hebrew and Japanese.

The department offers jointly with the Department of English the Bachelor of Arts (B.A.) degree in comparative literature studies (see page 55).

*Faculty:* Professor Morello, *chairperson*.

## Music

The Department of Music offers a Bachelor of Arts (B.A.) degree, a Bachelor of Music (B.M.) degree, and a program with the Department of Communication Studies which results in a B.A. degree with a double major in music and communication studies. The department also offers the Master of Music (M.M.) degree.

*Faculty:* Professor R. Lee, *chairperson*. Professors Dempsey, Gibbs, Kent, Ladewig, Livingston, Pollart, and Rankin; Assistant Professors Conley, Danis, and Parillo; Visiting Assistant Professor Mauro; Instructor Smith; Lecturer Frazier, Artist Instructors Buttery, Ceo, de la Garza, Dean-Gates, Djokic, Murray, Noreen, Salazar, Sparks, Stabile, Thomas, Towne, Vinson, and Zinno; Music Resources and Facilities Coordinator Bissett; Preparatory Division Coordinator Murray; Accompanists Chester and Munsch.

For information on the music minors, see the end of this listing.

## BACHELOR OF ARTS

Students selecting music as a major have two options: *music* or *music history and literature*.

Transfer credits in music theory, music history, and performance must be validated by placement examination.

Music majors interested in a career in communication studies and music may also complete a second major in communication studies. Bachelor of Arts degree candidates in music can also complete a double major with psychology or elementary education. The Music Department offers a double degree combining music (B.A. degree) with computer science or business administration (B.S.). Contact Professor Lee for more information.

Music majors interested in a career in business and the arts should complete the business minor for nonbusiness students described on page 69.

**Music.** Students selecting this option must complete 36 credits (maximum 51) in

musicianship, performance, and music electives, as follows: *Musicianship:* MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 221, 222 (6); 322 or upper-division music history course (3); 280 (0) and 480 [**capstone**] (1). Students who are deficient in keyboard skills must take MUS 171 (1). *Performance:* four semesters of the principal applied music area, at least two credits per semester (8); three semesters of ensembles appropriate to the principal applied music area (3); seven semesters of MUS 250 (0). A successful audition is required prior to study in the principal applied music area. *Electives:* the department strongly recommends that 12 credit hours of electives be taken in music. At least six of these credits should be in upper-division music courses.

A total of 120 credits is required for graduation. At least 42 of these must be at the 300 level or above.

**Music History and Literature.** Students choosing this option must complete 43 credits (maximum 55) in musicianship, performance, and music electives, as follows: *Musicianship:* MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 221, 222, 322 (9); three upper-division music history courses (9); 280 (0) and 480 [**capstone**] (1). Students who are deficient in keyboard skills must take MUS 171 (1). *Performance:* four semesters of the principal applied music area, at one credit for two semesters and two credits for two semesters (6); three semesters of ensembles appropriate to the principal applied music area (3); seven semesters of MUS 250 (0). A successful audition is required prior to study in the principal applied music area. *Electives:* the department strongly recommends that 12 credit hours of electives be taken in music. At least six of these credits should be in upper-division music courses. *Other:* nine credits of foreign language and proficiency through 103 in either French or German.

A total of 126 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF MUSIC

Students can be admitted to the B.M. degree program only after a successful audition in the principal applied music area and should contact the Department of Music for specific requirements. Transfer credits in music theory, music history, and performance must be validated by placement examination.

All Bachelor of Music students must successfully complete Option I or Option II of the piano proficiency examination of the piano proficiency requirement. In Option I, students must pass all seven piano proficiencies by the end of their junior year. Piano proficiency examinations before the faculty examination committee are scheduled on a regular basis during the fall and spring semesters. In Option II students take MUS 171, 172, 271, and 272 and successfully pass each course with a grade no lower than a C. Failure to pass either option will require re-examination in succeeding semesters. The B.M. degree will not be granted until this requirement is fulfilled.

Students selecting Option I will need to demonstrate the following seven piano proficiencies: 1) *nomenclature*, answering questions which deal with nomenclature concerning the piano as well as nomenclature which may concern tempo, dynamics, and/or other musical elements; 2) *scales*, performing all major scales two octaves, hands together, by memory at a tempo of M.M.=144 per note; 3) *harmonizing at sight*, by reading two melodies taken from any major or minor key chosen by the examination committee, improvising suitable accompaniments for the melodies by using diatonic triads and secondary dominants, and reading from chord symbols; 4) *transposition*, by transposing at sight two melodies selected by the examination committee; students will be asked to transpose the melodies either a half step or whole step up or a half step or whole step down; 5) *patriotic songs*, by playing *America* and *The Star-Spangled Banner* in a manner suitable for accompanying community or school singing; these accompaniments are to be prepared in advance; 6) *sight-read accompaniments*, by playing

at sight a four-part song and an accompaniment for a vocal or instrumental soloist; and 7) *repertoire*, by playing two prepared piano pieces by contrasting composers; each piece must be approved in advance by a member of the piano faculty or an instructor of class piano.

No student should participate in more than three major ensembles in a single semester.

In addition, students select one of the following majors.

**Music Composition.** Students selecting music composition must complete seven semesters of applied composition (110V, 210V, 310V, 410V), one or two credits per semester (10); seven semesters of the principal applied music area, two credits per semester (14); seven semesters of MUS 250 (0); and four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency exam before accumulating 60 credits. Also required are six semesters of major ensembles appropriate to the principal applied music area (6); MUS 119 (1), 120, 121, 122, 225, 226, 227, 228, 416 (17); 221, 222, 322 (9); 235 (3) and 311 (2); 417, 420, and 421 (9) (for students wishing to specialize in studio composition, three credits of MUS 434 may be substituted for MUS 420); an upper-division music history course (3); MUS 450 Senior Composition Recital [capstone] (0); MUS 280 (0) and 480 [capstone] (2); and nine credits of free electives, at least three of which are in upper-division music courses.

A total of 128 credits is required for graduation.

**Music Education.** See page 101 for admission requirements for teacher education programs. Students majoring in music education must complete 89 credit hours in *Studies in Music and Professional Education*, as follows:

*Studies in Music* (65 credits): seven semesters of the principal applied music area, two credits per semester (14). Seven

semesters of MUS 250 (0); senior recital MUS 450 [capstone] (0). Four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency exam before accumulating 60 credits. Seven semesters of major ensembles appropriate to the principal applied music area, at 0–1 credit per semester (6). MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 416 or 417 (3); 221, 222, 322 (9). MUS 169, 170, 173, 175, 177, 179 at a minimum of one credit each (6); 235 (3); 311, 312 (5).

*Professional Education* (24 credits): MUS 280 (0), 480 [capstone] (2); MUS 238, 339, 340 (9); EDC 250 (1), 484 (12). PSY 113 and EDC 312 (6) are required as *Professional Education* courses but also count toward the Social Science requirement in the Basic Liberal Studies program. The piano proficiency examination Options I or II and all courses required in the degree program, with the exception of MUS 480 [capstone], must be completed before supervised student teaching (EDC 484).

*Free electives:* three credits.

A total of 131 credits is required for graduation.

**Music Performance.** All students in this degree program must take the following music courses: eight semesters of MUS 250 (0); MUS 350 and 450 [capstone] (0); MUS 119 (1); 120, 121, 122, 225, 226, 227, 228, 416 (17); 221, 222, 322 (9). MUS 235 (3) and 442 (2); 311 (2); 280 (0); 480 [capstone] (2).

A total of 128 credits is required for graduation. In addition, students must select one of the following four options.

*Classical Guitar:* eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171 and 172 (2). Students may meet the

requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Four semesters of major ensembles (4). Four semesters of guitar ensemble (MUS 398G) and three semesters of playing guitar in chamber music ensembles (MUS 398) (7). An upper-division music history course (3); an upper-division music theory course (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

*Orchestral Instrument:* eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171 and 172 (2). Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Eight semesters of major ensembles appropriate to the principal applied music area (8). Three semesters of secondary or chamber music ensembles (3). An upper-division music history course (3); an upper-division music theory course (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

*Piano or Organ:* eight semesters of the principal applied music area. Two semesters of MUS 110 and 210 at three credits each (12); two semesters of 310 and 410 at four credits each (16). Four semesters of major ensembles (4). Six semesters of piano accompanying (MUS 371) or playing piano in chamber music ensembles (MUS 398) (6). MUS 420 (3). An upper-division music history course (3). Nine credits of free electives, at least six of which should be in upper-division music courses.

*Voice:* eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171, 172, 271, and 272 (4). Eight semesters of major ensembles

appropriate to the principal applied music area at zero or one credit per semester (7). Two semesters of chamber or other music ensembles (2). MUS 283 (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

Students selecting voice must also take nine credits of foreign language in any two or more languages. This requirement may be modified or satisfied by advanced placement.

## MINORS IN MUSIC

**Music.** This option gives students a broad-based background in music. Course work in this option is similar to that taken by students starting work toward a B.A. or B.M. degree in music. Students who wish to declare a minor in music using the music minor option must earn credit for MUS 111 (3) or 119 and 120 (3); 171 (1), 121 and 122 (4), 250 for a minimum of two semesters (0), and two 3-credit music history and literature courses selected from MUS 221, 322, 408, 430, 431, 433, 434 (or 222, if the student has the additional prerequisites) (6). Additionally, students must earn a minimum of four credits in their principal applied music area (MUS 110–410, at one or two credits per semester) and four credits in major ensembles\* appropriate to the principal applied music area (8). The total number of credits required for this option is 22. Students must pass an audition in their principal applied music area prior to registration for applied study in voice or on an instrument.

**Music Performance.** This option gives students the opportunity for a more concentrated study in voice or on an instrument. Students who wish to declare a minor in music using the music performance minor option must earn credit for MUS 111 (3) or 119 and 120 (3); MUS 121 and 122 or a music history course selected from MUS 101, 106, 221, 322, 408, 430, 431, 433, 434 (3–4); MUS 250 for a minimum of two semesters (0). Additionally, students must earn a minimum of six credits in their principal applied music area (MUS 110–410),

at one or two credits per semester and six credits in major ensembles\* appropriate to the principal applied music area (12). The total number of credits required for this option is 18–19. Students must pass an audition in their principal applied music area prior to registration for applied study in voice or on an instrument.

**Individual Music.** This option gives students more flexibility. These students design and develop their music minor program under the advisement and sponsorship of a full-time music faculty member. Petitions outlining and justifying the desired music minor program must be presented by the faculty sponsor to the music faculty for approval. A minimum of 18 credits is required. Petitions should be submitted as early as possible in a student's undergraduate program.

*\*Music ensembles include MUS 292, 293, 394, 395, 396, and 397. Up to one semester of MUS 291 can count toward the major ensemble requirement in the music minor option; up to two semesters of MUS 291 can count toward the major ensemble requirement in music performance option. Those with a major applied area in guitar can count MUS 398 for guitar ensemble as a major ensemble. Those with a major applied area in piano can count additional applied music credits (MUS 110–410) and/or accompanying (MUS 371) in lieu of the major ensemble requirements.*

## Philosophy

The Department of Philosophy offers a Bachelor of Arts (B.A.) degree.

*Faculty:* Professor Zeyl, *chairperson*. Professors Johnson, Y. Kim, Pasquerella, J. Peterson, Schwarz, and Wenisch; Associate Professor C. Foster; Assistant Professor Ariew.

Students selecting this major must complete no less than 33 credits (maximum 48) in philosophy. Students are required to take: PHL 205; at least one from PHL 101, 451 (logic); at least one from PHL 212, 314 (ethics); at least one from

PHL 341, 342, 452; both PHL 321 and 323; at least one from PHL 204, 318, 324, 346; and PHL 490 [**capstone**]. The remaining nine credits may be chosen freely from the list of PHL courses offered by the department. At least 18 credits in course work must be at the 300 level or above. Note: PHL 499 is also a **capstone** course in this major.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Physics

The Department of Physics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Muller, *chairperson*. Professors Heskett, Kahn, Kaufman, Letcher, Malik, Meyerovich, Nightingale, Northby, Nunes, and Steyerl; Assistant Professor Yoon, Adjunct Professors Hemenway, Kemp, and McCorkle; Adjunct Associate Professors Bozyan and Ruffa; Adjunct Assistant Professors Briere and Li; Professors Emeriti Cuomo, Desjardins, Hartt, Penhallow, Pickart, Stone, and J. Willis.

## BACHELOR OF ARTS

Students selecting this program must complete a minimum of 41–42 credits (maximum 45) in physics, mathematics, and computer science, including: PHY 203, 204, 205, 273, 274, 275 (12), 306 (3), 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491 or 492 (3), MTH 244 (3), CSC 211 (4) and one course from PHY 410 or CSC 212 (3–4). It is strongly recommended that students take MTH 141 and 142 in the freshman year.

Students in this program are encouraged to broaden their opportunities by using the block of electives to minor in business, education, engineering, medicine and molecular biology, language, or other physics-related interdisciplinary areas as listed under the B.S. program.

A total of 120 credits is required for the B.A. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE

This curriculum provides a general background in both theoretical and experimental physics. It forms a foundation for further study at the graduate level toward an advanced degree, and also prepares the student for a career as a professional physicist in industry or government. Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

In addition to the major, students are encouraged to use the large block of elective credits to develop a program of study as a minor (described on page 34) in applied or interdisciplinary fields, such as acoustics, geophysics, optics, energy, astronomy/astrophysics, atmospheric science, computational physics, mathematical physics, physics education, chemical physics, ocean physics, engineering physics, business, education, medicine and molecular biology, and languages. As with any minor, it will be recorded on the student's final transcript.

The following courses are required for the B.S., but exceptions and/or substitutions are possible, and can be arranged by consulting the department chairperson. For example, a well-prepared student can enroll for physics in the first semester of the freshman year, or courses in a related discipline may be taken instead of physics courses.

A total of 129 credits is required for graduation. PHY 483 and 484 are the **capstone** courses in this program.

### *Freshman Year*

*First semester: 15 credits*

MTH 141 (4), PHY 203, 273 (4), and Basic Liberal Studies requirements and electives (7).

### *Second semester: 16 credits*

MTH 142 (4), PHY 204, 274 (4), CSC 211 (4), Basic Liberal Studies requirements and electives (5).

### *Sophomore Year*

*First semester: 16 credits*

MTH 243 (3), PHY 205, 275 (4), 410 (3), Basic Liberal Studies requirements (6).

### *Second semester: 15 credits*

MTH 244 (3), PHY 331 (3) and 306 (3), and Basic Liberal Studies requirements (6).

### *Junior Year*

*First semester: 18 credits*

PHY 322 (3) and 381 (3), MTH 215 (3), Basic Liberal Studies requirements (6), and free electives (3).

### *Second semester: 17 credits*

Mathematics elective at the 300 or 400 level (3), PHY 382 (3) and 420 (3), and free electives (8).

### *Senior Year*

*First semester: 15 credits*

PHY 451 (3), 483 [**capstone**] (3), MTH 461 (3), and free electives (6).

### *Second semester: 16 credits*

PHY 402 (1), 452 (3), 455 (3), 484 [**capstone**] (3), and free electives (6).

## Physics and Physical Oceanography

The Department of Physics and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in physics and physical oceanography.

*Coordinators:* Professors Heskett and Muller (Physics). The faculty consists of the members of the Department of Physics and the GSO's physical oceanography faculty.

This program includes a comprehensive background in physics and a solid introduction to physical oceanography. The curriculum includes a full set of physics and mathematics courses required for a

B.S. in physics, with extra emphasis on classical physics, plus additional upper-division or graduate-level courses in fluid dynamics and physical oceanography.

The senior physics research project (PHY 483 and 484) will be undertaken in the Graduate School of Oceanography under the supervision of a GSO faculty member. In addition, students may find summer employment or participate in oceanographic research cruises after their junior year.

Students graduating in this course of study are well prepared to pursue careers in conventional physics or physical oceanography. Technical positions in private or government oceanographic research laboratories are available for physical oceanographers at the B.S. level. Students who continue on to graduate studies should expect to find high demand for physical oceanographers with advanced degrees. It is recommended that students planning to attend an oceanography graduate school take PHY 520 (Classical Dynamics); students wishing to keep open the option of physics at the graduate level should take PHY 452 (Quantum Mechanics). Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared to those entering from most other undergraduate institutions.

A total of 129 credits is required for graduation.

### *Freshman Year*

*First semester: 15–16 credits*

MTH 141 (4), PHY 203, 273 (4), CHM 101, 102 (4), Basic Liberal Studies requirements (3–4).

### *Second semester: 18 credits*

MTH 142 (4), PHY 204, 274 (4), CSC 211 (4), Basic Liberal Studies requirements (6).

### *Sophomore Year*

*First semester: 16 credits*

MTH 243 (3), PHY 205, 275 (4), 410 (3), Basic Liberal Studies requirements (6).

*Second semester: 15–18 credits*

MTH 244 (3), PHY 306 (3), 331 (3), Basic Liberal Studies requirements (6–9).

*Junior Year*

*First semester: 18 credits*

PHY 322 (3), 381 (3), 425 (3), MTH 215 (3), 461 (3), STA 409 (3).

*Second semester: 16 credits*

MCE 354 (3), MTH elective at 300/400 level (3), PHY 382 (3) and 420 (3), free elective (4).

*Senior Year*

*First semester: 18 credits*

OCG 501 (3), PHY 451 (3), 483 (3), 520 (3) (optional), free electives (6–9).

*Second semester: 13–16 credits*

OCG 510 (3), PHY 402 (1), 452 (3) (optional), 455 (3), 484 (3), free elective (3).

## Political Science

The Department of Political Science offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) in political science and the Master of Public Administration (M.P.A.).

*Faculty:* Professor Moakley, *chairperson*. Professors Hamilton, Hennessey, Killilea, Petro, L.E. Rothstein, A. Stein, Tyler, and Zucker; Associate Professor Genest; Assistant Professor Krueger; Professors Emeriti Leduc, Milburn, Warren, and S.B. Wood.

Students selecting this field must complete a minimum of 30 credits (maximum 45) in political science, including PSC 113 (3) and 116 (3). The remaining 24 credits will reflect the student's emphasis, though at least one course must be selected in each of the following: American politics, world politics, and political theory.

Students completing both the B.A. degree in political science and the B.S. degree in engineering may use courses in the political science major to satisfy Basic Liberal Studies requirements for the Bachelor of Arts. The College of Engineering and the Department of Political Science have established a curriculum that allows

for the completion of the two degrees and a public-sector internship in five years.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**John Hazen White Sr. Center for Ethics and Public Service.** An important part of URI's Political Science Department, this center was established in 1994 through a grant from John Hazen White Sr., a local businessman and philanthropist. The center offers ethics and public service programs for undergraduate and graduate students, elected and appointed officials, public managers, and citizen groups. In addition to research opportunities, workshops, and special programs, the center also offers URI students internships, for credit, in local public schools to encourage and mentor students at risk of dropping out. See Professor Alfred Killilea for more information.

## Portuguese

The Department of Modern and Classical Languages and Literatures offers a number of undergraduate courses in Portuguese. A minor is also available.

*Faculty:* Professor McNab, *section head*.

## Psychology

The Department of Psychology offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Quina, *acting chairperson*. Professors Berman, Biller, Brady, J.L. Cohen, Collyer, Faust, Florin, Grebstein, Harlow, Kulberg, LaForge, Morokoff, Prochaska, Rossi, Ruggiero, Silverstein, N. Smith, Stevenson, Valentino, Velicer, and Willis; Associate Professors de Mesquita, Gorman, and S. Harris; Assistant Professors Boatright-Horowitz, Bowleg, Koonce, Park, Rogers, and Wood; PCC Interim Director Varna Garis; Professors Emeriti Gross, A. Lott, B. Lott, Merenda, Vosburgh, and Willoughby.

In order to transfer from University College to Arts and Sciences as a psychology major (or to be coded as such in the college), a student must have a C or better in *each* of the following three courses: PSY 113; PSY 300; and PSY 232, 235 or 254.

Psychology majors are required to complete a minimum of 31 (maximum 46) credits in psychology courses to be distributed as follows: PSY 113 (with a grade of C or better); a minimum of two courses from PSY 232, 235, and 254 (with a C or better in each); both PSY 300 and PSY 301 (with a grade of C or better in each); a minimum of three topics courses from PSY 310, 335, 361, 381, 384, 385, 388, 432, 434, 436, 442, 460, 464, 470, 479 (selected topics), and 480 (the average in the three courses must be C or better); a minimum of one course in the applied knowledge area to be selected from PSY 103, 261, 275, 334, 465, 466, 471, and 479 (selected topics) (with a C or better); a minimum of one course (three credits) from the experiential practice and/or internships area selected from PSY 305, 371, 382, 473, 489, and 499 (with a C or better); and additional courses from the enrichment group for a minimum total of 31 credits (PSY 499 does not count toward the first 31 credits in the psychology major). Majors may take up to 46 credits in psychology.

Students who must repeat a course to meet the minimum grade requirement may use only three credits of that particular course toward the 120 credits required for graduation.

Students majoring in psychology typically go on to pursue either a career at the B.A. level or study for an advanced degree. In both cases, students should consult the department's online "Undergraduate Manual" and their academic advisor to select appropriate courses for their interests and goals.

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.



## Public Relations

The Departments of Communication Studies and Journalism offer the Bachelor of Arts (B.A.) degree in public relations.

*Coordinators:* Antone Silva, Communication Studies, and Linda Levin, Journalism.

This interdepartmental major combines a liberal arts education with the skills important to a career in public relations. Working with an advisor from Communications Studies or Journalism, students will develop a specific program of studies.

Students must complete the following courses before being accepted into the major: COM 101, 210, JOR 220 (with a C or better); MTH 107 or STA 220. Note: COM 101, 210, and MTH 107 or STA 220 may be used toward fulfilling requirements in the Basic Liberal Studies Program in English communication, letters, and mathematics, respectively. Based on quality point average, only the top 25 applicants will be admitted annually.

The major requires 33 credits including PRS 340, 441, 491; COM 306; JOR 341 (15). Students must complete six courses (18 credits) from the following including at least one course from each category—Category A: JOR 321, WRT 301, 333; Category B: MKT 301, 331, 405; Category C: COM 302, 320, 415, 450; Category D: JOR 342, 410, PSY 335.

A total of 121 credits is required for graduation. At least 42 of these must be at the 300 level or above.

A minor is also available (see page 37).

## Russian

Admission to the Bachelor of Arts (B.A.) program in Russian is currently suspended.

The Department of Modern and Classical Languages and Literatures offers a number of courses in Russian. The minor in Russian is still available.

*Faculty:* Professor Aronian, *section head*.

## Sociology

The Department of Sociology and Anthropology offers the Bachelor of Arts (B.A.) degree in sociology and the Bachelor of Science (B.S.) degree in applied sociology.

*Faculty:* Professor Mederer, *chairperson*. Professors Albert, Carroll, Peters, Reilly, and Travisano; Associate Professors Cunnigen and Danesh; Assistant Professors Costello and Van Wyk.

### BACHELOR OF ARTS

Students selecting this curriculum must complete a minimum of 30 credits (maximum 45) in sociology, including: SOC 100, 301, 401, 495 [capstone], and two courses selected from SOC 240, 242, 336, 413, 428, and 452. At least 18 of the 30 credits must be at the 300 level or above. No more than six credits in independent study and/or field experience courses may be used toward the 30 credits required for the major. SOC 495 is to be taken during the senior year. Students interested in anthropology are referred to the anthropology major previously described in this catalog.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

### BACHELOR OF SCIENCE IN APPLIED SOCIOLOGY

Students in this curriculum elect either the public policy or organizational analysis option and must notify the dean's office of the chosen option.

SOC 495 is the **capstone** course for both options.

**Public Policy Option.** A minimum of 30 credits in sociology is required including SOC 100, 301, 401, 402, 495, and 505 (18); and six credits in sociology at the 300 level or above. No more than six credits in independent study and/or field experience courses may be used toward the 30 credits required for the major. In addition, students selecting this option must com-

plete ECN 201 and 202 (6); MTH 111 (3); STA 308 and 412<sup>6</sup> (6); CSC 201<sup>6</sup> (4); WRT 333 (3); HSS 350 (3); PSC 113 (3); PSC 221 and 422 or PSC 304 and 466 (6); PSC 369 and 483 (6).

A total of 126 credits is required for graduation.

**Organizational Analysis Option.** A minimum of 30 credits in sociology is required including SOC 100, 301, 320, 401, 495 (12); and six credits in sociology at the 300 level or above. No more than six credits in independent study and/or field experience courses may be used toward the 30 credits required for the major. In addition, students selecting this option must complete ECN 201 and 202 (6); MTH 111 (3); STA 308 and 412<sup>6</sup> (6); CSC 201<sup>6</sup> (4); WRT 333 (3); MGT 301, 302, 306, 380, 407, and either BSL 333 or MGT 408 or MGT 453 (18).

Admission to this option is open to only 15 students per graduating class. Applications for admission will be reviewed only once each year, usually on or about March 1. Students must apply by the end of February by submitting their names to the University College advisor for sociology or to the chairperson of the Department of Sociology and Anthropology. To be considered for the organizational analysis option, students must have earned a minimum of 45 credits by the application deadline and must have at least a 2.00 quality point average. Preference for admission will be given to those individuals with the highest quality point averages.

A total of 126 credits is required for graduation.

## Spanish

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Spanish. The department also offers the Master of Arts (M.A.) program in Spanish.

*Faculty:* Professor Gitlitz, *section head*. Professors Manteiga and Trubiano; Associate Professors Morín and C. White; Assistant Professors de los Heros and Paz-Pintane.

For the Spanish major, students will complete a minimum of 30 credits (maximum 45), including SPA 325 and three 400-level courses (excluding SPA 421). SPA 421 may be used as part of the remaining 18 required credits. Note: SPA 101, 102, 316, 317, 321, 391, 392, and 393 cannot be counted toward the Spanish major. Students may also include LIN 202 and 220, and—with permission of the advisor, section head, department chairperson, and dean—courses in allied fields such as history, art, and anthropology. These requirements are the same for the secondary education major.

A summer field workshop (SPA 310) in Spain or Spanish America is occasionally offered for three to six credits. For information, see the section head.

Students in the International Engineering Program must take SPA 312, 316, 317, 321, 325, and a 400-level engineering course taught in Spanish. IEP students beginning their study of Spanish at the 200 level or higher may opt to take up to six credits of Portuguese toward the completion of the major in Spanish. IEP students do not have to take three 400-level courses in Spanish, but must take at least one 400-level literature course in Spanish. Note: SPA 101, 102, 391, 392, and 393 cannot be counted toward the major for IEP students. The 6-credit Portuguese option is available to IEP students only. Students in the IEP may also use three credits of Spanish literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Statistical Science

Admission to the B.S. program in statistical science is currently suspended.

**Minor in Statistics.** Students who wish to declare a minor in statistics must earn credit for STA 409 (3), 412 (3), MTH 451 (3), and three three-credit statistics courses chosen with prior approval of the chairperson of the Department of Computer Science and Statistics.

## Theatre

The Department of Theatre offers a Bachelor of Fine Arts (B.F.A.) degree. Permission to register for work toward the B.F.A. area of specialization in theatre must be obtained through a departmental review.

*Faculty:* Associate Professor McGlasson, *chairperson*. Professor J. Swift; Associate Professors G. Armstrong and Wittwer; Assistant Professors Howard and Wortman; Lecturer Hawkridge.

Productions at URI cover the range of theatre forms, ancient to modern, with an emphasis on contemporary and experimental work. All members of the University community may participate in productions.

## BACHELOR OF ARTS

Enrollment in this program is currently suspended, with the exception of students enrolled in the elementary education program. Elementary education students who do not complete the elementary education program must switch to the B.F.A. program in order to earn a degree in theatre.

Students must fulfill the elementary education requirements as well as a total of 33 credits (maximum 48) as follows: THE 111 (3), 117 (3), 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 321 (3), 381 and 382 (6), 383 or 384 or 481 (3). Potential B.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year. B.A. candidates may elect

up to 15 more credits in theatre with the approval of their department advisor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF FINE ARTS

The B.F.A. program is intended for highly motivated students who wish their education to emphasize a major theatrical field of interest. The program offers concentrated study in acting, design and theatre technology, directing, and stage management. Admission into one of the B.F.A. concentrations is contingent upon departmental approval and is based on completion of 15 hours in the B.F.A. core curriculum, and selection of a B.F.A. area of specialization in consultation with the student's departmental academic advisor. Specific requirements of these areas are flexible to suit students' individual needs.

All B.F.A. students are required to complete 34 hours in core courses distributed as follows: THE 111 (3), 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 291 (2), 321 (3), 351 or 352 (3); two courses from 381 (3), 382 (3), 383 or 384 or 481 (3) to total six credits; and 391 (2). All B.F.A. candidates are urged to select a course from ENG 362, 366, 446, or 472, and to complete THE 111, 161, and 181 by the end of their freshman year. Entrance into the B.F.A. program requires approval from the department chairperson.

In addition to the core requirements, each student selects one of the following specializations. Students must notify the Office of the Dean of the area of specialization they have selected. B.F.A. students selected for an internship program may substitute up to 12 credits from theatre courses in their area of specialization, subject to departmental approval. Transfer students, late entries into the theatre major, and others wishing to modify this schedule of B.F.A. requirements may do so in consultation with their faculty advisor and with permission of the department chairperson.

**Acting.** These students must complete an additional 40 credits: THE 117 (3), 211 and 212 (6), 213 and 214 (2), 300 or 301 (3), 311 and 312 (6), 313 and 314 (2), 350 (1), 400 or 401 (3), 411 and 412 (6), 417 and 418 (2). Select six credits from THE 217, 227, and 413. Recommended electives include courses in related fields such as anthropology, art, communication studies, history, literature, music, psychology, and sociology.

A total of 133 credits is required for this specialization.

### **Design and Theatre Technology.**

Students selecting design and theatre technology must complete an additional 31 credits: THE 300 (3), 301 (3), 351 or 352 (3) to complete the sequence begun in the core curriculum; 350 (1), 355 (3), 365 (3), 371 (3); and 12 credits selected from 362 (3), 400 (3), 401 (3), 415 (12), 451 (3), 455 (3), 463 (3), 465 (3), 475 (3). Recommended electives include ARH 251, 252, ART 207, and courses in related fields.

A total of 130 credits is required for this specialization.

**Directing.** Students selecting directing must complete an additional 33 or 35 credits: THE 300 or 301 (3), 322 (3), 331 (3), 341 (3), 355 or 365 or 371 (3), 400 or 401 (3), 413 (3), 420 (3), 481 or 484 (3). They must also complete a one-year sequence in acting selected from the following options:

1. 211 (3), 213 (1), 212 (3), and 214 (1), to total (8)

2. 411 (3), 417 (1), 412 (3), and 418 (1), to total (8)

Recommended electives include courses in anthropology, art history, history, literature, music, psychology, and sociology.

A total of 130 credits is required for this specialization.

**Stage Management.** Students selecting stage management must complete an additional 30 credits: COM 320 (3); MGT 300 (3); THE 300 (3), 301 (3), 341 (3), 355 or 365 (3), 371 (3), 400 (3), 401 (3), 441 (3).

A total of 130 credits is required for this specialization.

## **Women's Studies**

This interdepartmental program leads to a Bachelor of Arts (B.A.) degree in women's studies. The aim of the program is to provide an option for students who are interested in the interdisciplinary study of the culture and experiences of women.

*Faculty:* Professor S. Grubman-Black, *director*. Professor Reilly; Associate Professor Hughes.

The women's studies program requires 30 credits for a major. Five required courses are: WMS 210, 300, 310, 330, 400 [capstone]. Five courses needed to complete the concentration may be selected from: ARH 285; ECN 386; ENG 260, 385; HDF 230, 430, 432, 433, 437, 505, 559; HIS 118, 145, 308, 351, 352, 376; MGT 401; NUR 150; PEX 375; PHL 210; PSY 430, 466, 480; SOC 212, 242, 413, 420, 430; WMS 150, 220, 333, 350, 351, 450, and 490. In addition to this list, there are special courses offered by various departments each year that may be selected with prior approval of the Women's Studies Advisory Committee and some additional preapproved topics courses not offered on a regular basis. Students must file a program of study with the dean's office. The Women's Studies Advisory Committee also strongly recommends that majors take an additional 18 credits in a specialized area as a minor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

<sup>1</sup> Chemistry majors, for ACS accreditation purposes, will be allowed 48 credits.

<sup>2</sup> Biological sciences majors may take CHM 124, 126 and BCH 311 instead of CHM 226, 227, and 228. Students should consult an advisor.

<sup>3</sup> Biological sciences majors are strongly advised to begin taking required major courses at this time.

<sup>4</sup> CHM 229 and 230, which are offered through the Alan Shawn Feinstein College of Continuing Education, may be substituted for CHM 226.

<sup>5</sup> Students must complete all additional Basic Liberal Studies requirements with courses approved by the College of Arts and Sciences (see page 47).

<sup>6</sup> BAC 201 and 202 may be substituted for STA 308 and 412, and BAC 110 may be substituted for CSC 201 if these courses are already completed when the student transfers into the B.S. program.

## COLLEGE OF BUSINESS ADMINISTRATION

Edward M. Mazze, *Dean*

Jane M. Stich, *Assistant Dean*

*Faculty:* Professors C. Armstrong, Beauvais, Budnick, S. Chen, Comerford, Cooper, Della Bitta, deLodzia, N. Dholakia, R. Dholakia, Ebrahimpour, Hickox, Higgins, Humphrey, Jarrett, E. Johnson, C. Kim, Koza, Laviano, Mangiameli, S. Martin, Matoney, Mazze, Mojena, Narasimhan, Overton, Scholl, Schwarzbach, Sink, Vangermeersch, Venkatesan, and Westin; Associate Professors Ageloff, Beckman, Boyle, Dash, Dugal, Dunn, Hazera, Y. Lee, Oppenheimer, Randall, D. Rosen, and Surprenant; Assistant Professors Graham, Lehrer, Lin, Lloyd, Sabherwal, Varki, and Wang.

The eight majors in the College of Business Administration allow students to develop competence in special fields of interest and prepare them to meet the changing complexities of life and leadership in the business community. Majors are offered in accounting, finance, financial services, general business administration, international business, management, management information systems, and marketing.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, letters, foreign language and culture, and the arts. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, information systems, finance, marketing, organization and management theory, operations management, and statistics. The college emphasizes behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed on the total business

environment as a part of the national and world economic structure. Theory, analysis, and decision making are stressed in all areas of learning.

The College of Business Administration is a professional school with courses in lower and upper divisions. The lower-division courses constitute those taught in the freshman and sophomore years; the upper-division courses constitute those taught in the junior and senior years. Courses taken by transfer students at the lower-division level may be applied to satisfying upper-division requirements only after successful completion of a validating examination. All 500- and 600-level courses in the college are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the majors and must obtain a cumulative quality point average of 2.00 or better for all required courses in the major. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the Office of the Dean.

### Admissions Requirements

All students are initially enrolled in University College, where they complete general education and business core courses. Core requirements include accounting, economics, management information systems, mathematics, and statistics. Freshmen who complete a minimum of 27 credits with an overall grade point average of 3.00 or higher, and who complete BAC 110 and 120 with Bs or better, will be admitted to the College of Business Administration at the end of the freshman year. First-semester sophomores who complete a minimum of 42 credits with an overall grade point average of 2.40 or higher and who have a 2.40 or higher average in ACC 201; BAC 110, 120, 201; and ECN 201 will be admitted. Students not qualifying after the first semester of their sophomore year must still meet these requirements.

Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs who have not met entrance requirements to the College of Business Administration are permitted to enroll only in 100- and 200-level business courses and in nonbusiness courses.

To ensure that business majors have access to required courses, a strict registration policy will be followed with regard to business courses. Highest priority will be given to students for whom a course is a program requirement, as stated in this catalog, followed by any student in the College of Business Administration.

### Curriculum Requirements

The first two years are common to all majors in the college.

*Freshman Year:* 16 credits in the first semester and 15 credits in the second semester. BAC 110 and 120 are taken in alternate semesters, with the balance of credits in general education. Students majoring in international business are required to complete LET 151J and PSC 116.

*Sophomore Year:* 15 credits in each semester. The ACC 201, 202, ECN 201, 202, and BAC 201, 202 sequences are begun in the first semester and completed in the second. WRT 227 may be taken in either semester. The balance of credits is made up of general education requirements and free electives.

**General Education.** Students are required to select and pass 39 credits of course work from the general education requirements as listed on pages 32–33. Specific requirements of the College of Business Administration in each group follow.

*Group A.* A minimum of three credits in literature.

*Groups F, L, and N.* Any course for which prerequisites have been met.

*Group M.* BAC 120 in the freshman year.

*Group S.* ECN 201, 202 in the sophomore year.

*Group C.* COM 101; WRT 101, 201, or 333 in the freshman year; WRT 227 (Group Cw) in the sophomore year.

**Electives.** Free electives may be either professional or liberal electives. Professional electives are upper-level courses offered by departments in the College of Business Administration and by the Department of Economics. Liberal electives are courses offered by departments outside the College of Business Administration.

**Business Honors Program.** In cooperation with the University Honors Program, academically talented business students are able to enhance their intellectual development and strengthen their preparation by participating in the Business Honors Program.

**Minors.** College of Business Administration majors are encouraged to develop a non-business minor. Special permission may be given for business majors to pursue a business minor as long as the number of credits for the business minor falls within the 50 percent rule of the AACSB, the International Association for Management Education. This rule requires that 50 percent of a student's curriculum is chosen from general education requirements or courses in colleges other than the College of Business Administration.

*International Business Studies Minor.* In cooperation with URI's Department of Modern and Classical Languages and Literatures, the College of Business Administration offers an opportunity for students to include an international emphasis within their undergraduate business major. The business requirements include a major in finance, general business administration, management, or marketing with professional electives in multinational finance, international dimensions of business, and international marketing. The student also

develops a language component, choosing from French, German, Italian, or Spanish. In addition, studies in international politics, European history, and courses in history and literature of the target country are included. Following the junior or senior year, students have the opportunity to compete for professional internship positions with international firms.

*Business Minor for Nonbusiness Students.* The College of Business Administration offers a minor for nonbusiness students. The minor includes basic foundation courses that must be completed by all students, and upper-level courses selected from the various functional areas. Foundation courses include ACC 201, BAC 110, ECN 201, and MGT 110. Three other three-credit courses from the College of Business Administration are required; two of these must be at the 300 or 400 level. Students must meet all prerequisites.

## Accounting

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in accounting. The college also offers the Master of Science (M.S.) degree, which provides the education recommended by the American Institute of Certified Public Accountants for the practice of public accounting.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants in both government and industry. This curriculum has been designed to meet that demand.

In addition to providing a general cultural and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become industrial accountants, cost analysts, auditors, credit analysts, controllers, income tax consultants, teachers of specialized business subjects, certified

public accountants, government cost inspectors, or government auditors.

The broad scope of the courses offers fundamental training in the accounting field of the student's choice, whether this training is to be used as an aid to living or as a basis for graduate study.

### Junior Year

*First semester: 15 credits*

ACC 311 (3) and 321 (3), FIN 301 (3), MGT 301 (3), and one free elective (3).

*Second semester: 15 credits*

ACC 312 (3), 443 (3), MKT 301 (3), MSI 309 (3), and one professional elective (3).

### Senior Year

*First semester: 15 credits*

ACC 431 (3) and 461 (3), BSL 333 (3), one professional elective (3), and one free elective (3).

*Second semester: 15 credits*

ACC 415 (3), MGT 410 [capstone] (3), one professional elective (3), and two free electives (6).

*Note:* All accounting majors are required to complete a minimum of three credit hours in each of the following areas. *Behavioral Science:* fulfilled by taking PSY 113, SOC 100, 102, or 204 as a free elective. *Ethical Foundations:* fulfilled by taking PHL 212 as a Letters general education requirement or as a free elective; or MGT 380 as either a professional elective or a free elective. *Political Foundations:* fulfilled by taking PSC 113, 116, or GEG 104 as a free elective.

## Finance

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in finance. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in finance and the Doctor of Philosophy (Ph.D.) degree.

A major in finance prepares the student for managerial positions in the private, public, and nonprofit sectors. The curricu-

lum emphasizes both financial decision making and implementation.

Careers in finance are found in commercial banking and other financial institutions; security analysis, portfolio, and related investment management; corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; and financial administration tasks in federal and state agencies as well as in the non-profit sector in hospitals, nursing homes, and educational institutions.

#### *Junior Year*

*First semester: 15 credits*

FIN 301 (3) and 331 (3), MGT 301 (3), MSI 309 (3), and one liberal elective (3).

*Second semester: 15 credits*

BSL 333 (3), FIN 322 (3), MKT 301 (3), one professional elective (3), and one liberal elective (3).

#### *Senior Year*

*First semester: 15 credits*

Two finance electives (6),\* FIN 452 (3), one professional elective (3), and one liberal elective (3).

*Second semester: 15 credits*

One finance elective (3),\* MGT 410 [capstone] (3), two professional electives (6), and one free elective (3).

*\*Finance electives must be drawn from FIN 401, 420, 425, 433, 441, 455, and 460.*

## Financial Services

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in financial services. This curriculum provides highly skilled graduates for the financial services field, an industry important in the state of Rhode Island and the region.

In consultation with their advisors, students pursuing this program choose their professional electives from four concentrations: banking, financial planning, risk management and insurance, and mutual funds. Courses being offered as part of this

degree are also of interest to other students in the College of Business Administration, as elective courses or for their own educational goals.

#### *Junior Year*

*First semester: 15 credits*

FIN 301 (3) and 331 (3), MGT 301 (3), MKT 301 (3), and one liberal elective (3).

*Second semester: 15 credits*

BSL 333 (3), FIN 322 (3), MKT 341 (3), MIS 310 (3), and one liberal elective (3).

#### *Senior Year*

*First semester: 15 credits*

MSI 309 (3), three professional electives (9), and one liberal elective (3).

*Second semester: 15 credits*

MGT 410 (3), seminar in financial services (FIN 491/492/493) (3), two professional electives (6), and one free elective (3).

## General Business Administration

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in general business administration. This curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for: 1) those students who are planning to operate their own businesses and are seeking a broad business background; 2) those who are preparing for positions in large organizations with training programs in which specialization is taught after employment; and 3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

Students who major in general business administration will be limited to a maximum of nine credits of professional electives in a specific business or economics major. A general business administration student should take a broad spectrum of courses and not concentrate in one special field of study. For students interested in courses offered outside the Col-

lege of Business Administration, four professional electives may be taken from the 300- and 400-level courses offered in other colleges.

All general business administration majors are strongly encouraged to include in their program of study one of the following: three to six credits of internship, a three-credit course in community service or another course outside the management area that offers collaborative experience, a study abroad experience, or a minor.

Note: MGT 410 is the **capstone** experience in this program.

#### *Junior Year*

*First semester: 15 credits*

FIN 301 (3), MGT 301 (3), MKT 301 (3), MSI 309 (3), and one free elective (3).

*Second semester: 15 credits*

BSL 333 (3), FIN elective (3), INS 301 (3), MKT elective (3), and one free elective (3).

#### *Senior Year*

*First semester: 15 credits*

MGT 380 (3), two professional electives (6), and two free electives (6).

*Second semester: 15 credits*

MGT 410 [capstone] (3), three professional electives (9), and one free elective (3).

Note: One professional elective must be chosen from ECN 338, 344, FIN 452, MGT 453, or MKT 451.

## International Business

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in international business. The curriculum is designed to prepare students to meet the challenges of an international career by achieving a high degree of proficiency in the language of another country as well as a background in its history, economy, politics, culture, and arts. In addition to the common body of knowledge required of all business students, international business majors will study business principles taught

from a global perspective. A required internship abroad and/or study abroad experience is an essential part of the program.

Students are strongly encouraged to use professional and free electives to develop a specialization in one of the functional business areas such as accounting, finance, management, marketing, or management information systems.

#### *Junior Year*

*First semester: 15 credits*

FIN 301 (3), MKT 301 (3), MGT 301 (3), MSI 309 (3), and one foreign language or culture course (3).

*Second semester: 15 credits*

Two professional electives (6), and three electives (9). (Study Abroad.)

#### *Senior Year*

*First semester: 15 credits*

BSL 333 (3), FIN 452 (3), MKT 451 (3), one international business elective (3), and one course that is part of both the Letters and Foreign Culture general education divisions (3).

*Second semester: 15 credits*

MGT 410 [capstone] (3), one international business elective (3), two professional electives (6), and one free elective (3).

*Note:* International business electives must be chosen from BUS 354; COM 337; ECN 338, 344; FIN 455; MGT 453.

## Management

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in management. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management and the Doctor of Philosophy (Ph.D.) degree.

This curriculum is intended to provide the student with a background in the conceptual, analytical, and applied aspects of the management of organizations. The areas of study focus on decision making from the perspective of the policy sciences. Courses tend to cluster in the areas of

behavioral science, including organizational theory, business law, general business administration and policy, and industrial and labor relations. Courses are carefully integrated to include an overall introduction to business administration, with a number of complementary areas of study in organizational theory and behavior, the management of human resources, industrial and labor relations, personnel administration, general business administration, and business law.

Careers in business, government, hospitals, and other organizations are open to students who have successfully completed the curriculum. These studies also provide a good background for graduate programs in management.

All management majors are strongly encouraged to include in their program of study one of the following: three to six credits of internship, a three-credit course in community service or another course outside management that offers collaborative experience, a study abroad experience, or a minor.

#### *Junior Year*

*First semester: 15 credits*

MGT 301 (3), MKT 301 (3), MSI 309 (3), one liberal elective (3), and one free elective (3).

*Second semester: 15 credits*

FIN 301 (3), MGT 302 (3), 303 (3), one liberal elective (3), and one professional elective (3).

#### *Senior Year*

*First semester: 15 credits*

BSL 333 (3), MGT 380 (3), two MGT electives (6), and one free elective (3).

*Second semester: 15 credits*

MGT 410 [capstone] (3), two MGT electives (6), one professional elective (3), and one liberal elective (3).

*Note:* If MGT 453 is not selected as a MGT elective, then one professional elective must be selected from ECN 338, FIN 452, MGT 453, or MKT 451.

## Management Information Systems

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in management information systems. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management information systems and the Doctor of Philosophy (Ph.D.) degree.

URI's management information systems major reflects the advanced technologies used in business and industry today. Graduates earn a B.S. in business administration with an emphasis on computer applications, system analysis and design, and database management. Graduates will possess skills in the application of microcomputer software and related tools. They will understand the value of "information" and the various technologies used to help organizations use information.

MIS majors must receive a C or better in each prerequisite course for all management information systems courses counting toward the major. They must also receive a C or better in each MIS course required for completion of the major.

#### *Junior Year*

*First semester: 15 credits*

MIS 320 (3), BSL 333 (3), FIN 301 (3), MSI 309 (3), and one liberal elective (3).

*Second semester: 15 credits*

MIS 440 (3), one major elective (3)\*, MGT 301 (3), MKT 301 (3), and one professional elective (3).

#### *Senior Year*

*First semester: 15 credits*

MIS 430 (3), one major elective (3), two professional electives (6), and one liberal elective (3).

*Second semester: 15 credits*

MIS 445 (3), MGT 410 (3), one professional elective (3), and two free electives (6).

\*Major electives: BUS 493; MIS 310, 410, 420, 425, 435, 493, 495; MSI 350.

## Marketing

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in marketing. Elective courses in the department expose students to career opportunities in advertising, product management, sales management, marketing research, and other facets of marketing management. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in marketing and the Doctor of Philosophy (Ph.D.) degree.

A major focus of marketing is determining product and service needs of consumers and industries. Marketing research, information systems, and analysis are used in the development and management of

products and services, as well as the design and execution of communications, pricing, and distribution channels. Three unspecified but required marketing electives allow students to plan, in consultation with their advisors, an arrangement of courses to meet individual career objectives. With prior permission of the advisor and chairperson, one marketing elective may be replaced by a course outside the department to enhance career objectives.

### *Junior Year*

*First semester: 15 credits*

MGT 301 (3), MKT 301 (3), MSI 309 (3), one free elective (3), and one liberal elective (3).

*Second semester: 15 credits*

BSL 333 (3), FIN 301 (3), MKT 311 (3), 315 (3), and one free elective (3).

### *Senior Year*

*First semester: 15 credits*

One liberal elective (3); two marketing electives selected from MKT 405, 406, 442, 451, 461, 491, and 492 (6); one professional elective (3); and another professional elective (3) selected from ECN 338, 344, FIN 452, MGT 453, and MKT 451 (unless MKT 451 was taken as a marketing elective).

*Second semester: 12 credits*

MGT 410 [**capstone**] (3), MKT 409 (3), one professional elective (3), and one liberal elective (3).

*Note:* One liberal elective is to be selected from the following: APG 203; COM 103, 200, 210, 220; PHL 212; PSY 113; SOC 100, 102, 204; WRT 300 and 333.



## ALAN SHAWN FEINSTEIN COLLEGE OF CONTINUING EDUCATION

John H. McCray Jr., *Vice Provost for  
Urban Programs*

Edmund J. Ferszt, *Associate Dean*

The Alan Shawn Feinstein College of Continuing Education offers courses and degree programs designed for adults whose family or work responsibilities may have caused an interruption in their formal post-high-school education. Others find the campus' downtown location and offerings provide the convenience they need. The Providence Campus offers the following academic programs:

### *Bachelor of Arts Degree*

English  
History  
Psychology

### *Bachelor of Science Degree*

General business administration  
Human development and family studies  
Industrial and manufacturing engineering

### *Bachelor of General Studies Degree*

Applied communications  
Business institutions  
Health services administration  
Human studies

### *Graduate-Level Programs*

Adult education (M.A.)  
Business administration (M.B.A.)  
Clinical laboratory science (M.S.)  
Communication studies (M.A.)  
Labor and industrial relations (M.S.)  
Library and information studies (M.L.I.S.)  
Marine affairs (M.M.A.)  
Public administration (M.P.A.)

In addition, the campus offers advanced and graduate-level courses in computer science, electrical engineering, mechanical engineering and applied mechanics.

Information on the college's B.G.S. degree follows. For curriculum requirements on any of the other programs listed above, see the index to find the appropriate section of this catalog.



ASFCCE also offers for-credit certificate programs in applied behavioral psychology, psychology, alcohol and drug counseling, and thanatology, as well as non-credit certificate programs. Individual credit and non-credit Continuing Education Unit (CEU) courses are offered in addition to institutes and special courses planned for business, industry, labor, and government agencies.

Courses are offered on weekday mornings, afternoons, evenings, and Saturdays. The college also offers distance learning courses through interactive video, the Internet, and by e-mail. Students enrolling in a degree program may attend at times most convenient for them.

**Summer Sessions.** ASFCCE develops, schedules, and coordinates all of the University's summer offerings. Day and evening courses are offered in two five-week sessions at Kingston and in Providence. In addition, a number of special programs, including study in foreign countries, are offered at varying dates in the alternate session. Students may attend either or both campuses and enroll in day or evening courses offered in any summer session. Students expecting to apply summer credit to an academic degree program are advised to obtain prior approval from

their academic dean before registering. Maximum course load is seven credits per summer session including simultaneous courses in the alternate session. Exceptions are allowed with permission of the student's academic dean.

## Bachelor of General Studies

The Bachelor of General Studies (B.G.S.) program is designed for adults who have been out of school for five or more years. It is a good choice both for people who have never been to college and for students who attended college in the past but did not complete a degree. For the latter, the B.G.S. program makes it possible to apply their previous educational experience toward a degree program. The admissions process should begin with an interview with a B.G.S. advisor in the Providence campus' Admissions and Advising Office.

Qualified applicants interested in other programs at ASFCCE may also be interested in the college's performance based admission policy; see page 76 for details.

The B.G.S. program consists of the following required sections: 1) Pro-Seminar (BGS 100), 2) Traditions and Transformations (URI 101B), 3) general education,

4) major curriculum, 5) electives, and 6) Senior Project (BGS 399).

A total of 118 credits is required for the Bachelor of General Studies degree.

**Pro-Seminar for Returning Students** (3 credits). This is the required entry course that introduces returning students to the college's academic environment. The BGS 100 course helps students identify their scholastic strengths and interests, and assists adults in building the self-confidence to pursue a degree plan. The Pro-Seminar is limited to 16 students and opens the door to the University by helping returning students adjust to academic life. The instructors are carefully chosen and all have prior experience in teaching adults.

While enrolled in the Pro-Seminar, B.G.S. students are encouraged to take one or more College Level Examinations Program (CLEP) tests to measure academic knowledge acquired through prior experience. Credits gained through these tests are applied to the general education requirements. (See page 30 for information on the CLEP tests.)

### Traditions and Transformations

(1 credit). URI 101B is a University-wide seminar to introduce new students to the academic culture of higher education and to significant issues that bear on the development of each student's goals for the undergraduate years. Students enroll concurrently in URI 101B and the Pro-Seminar (BGS 100).

### General Education Requirements

(39 credits). Students in the B.G.S. program must meet the University's general education requirements as explained on page 32, including the URI 101 requirement. (Note: Health services administration majors must take MTH 107 or STA 220 as the math requirement.) B.G.S. students use Senior Seminars BGS 390, 391, 392 to fulfill general education requirements. Students should consult frequently with their B.G.S. advisor to be sure all general education requirements are met.

**Senior Seminars** (18 credits). The Senior Seminars are a distinctive feature of the B.G.S. program. These three six-credit seminars are interdisciplinary in nature and enable students to integrate and synthesize their educational experiences. These seminars are normally begun when students have completed their other general education courses and most of the courses required for their major.

BGS 390 Social Science Seminar  
(6 credits)

BGS 391 Natural Science Seminar  
(6 credits)

BGS 392 Humanities Seminar  
(6 credits)

**Major Curriculum** (45 credits). B.G.S. students can choose from the following majors: applied communications, business institutions, health services administration, and human studies. These majors allow students to take courses in several disciplines to meet their educational goals in a nontraditional way. A major may be made up of a carefully prescribed set of courses or it may be flexible in its requirements, allowing students to work creatively with an advisor to design an individualized program that meets both the student's needs and the general goals of the B.G.S. program.

**Electives** (27 credits). Electives permit students to complete the B.G.S. degree in a number of creative ways, through course work, carefully designed work experience internships, or previous but relevant educational experience. Up to 15 credits may be taken in URI's Internships and Experiential Education program, or students may choose to take courses to fulfill this requirement. BGS 390, 391, and 392 may be counted as electives if they are not used to fulfill general education requirements.

**Senior Project** (3 credits). All B.G.S. students must complete the BGS 399 Senior Project or a department-directed study. This capstone experience for B.G.S. students provides a structure that enables the

student to integrate knowledge and skills from coursework and related experiences with a research project or field experience. The project must be designed so that it allows the student to demonstrate the relationship of subject matter, theory and practice. Students are required to meet with the B.G.S. coordinator to plan a project proposal. This written proposal must meet with the approval of both the coordinator and an appropriate faculty advisor before the student can register for BGS 399.

### APPLIED COMMUNICATIONS MAJOR

Students interested in the broad field of applied communications will be interested in this major. It allows a student, working with an advisor, to design an individual program that must then be approved by the program coordinator.

**Communications Core** (24 credits). These courses, all at or above the 200 level, must be chosen from communication studies, journalism, and writing (or ENG 205 or 305), with 12 credits from one department and six credits from each of the other two. Prerequisite communications courses are COM 101 and WRT 101.

**Methodology Course** (3 credits). Students may select COM 206, HSS 320, PSY 300, or STA 308.

**Major Seminar** (BGS 398 [capstone]) (3 credits). Students take this course near the end of their degree program, as it gives them an opportunity to review and evaluate the skills and knowledge they have acquired through their major.

**Area of Emphasis** (15 credits). With the help of an advisor, students select 15 credits that will comprise an area of emphasis, which may be used either to further develop skills in communications or for study in related areas. This area of emphasis must be approved by an advisor and the program coordinator by the beginning of the student's junior year.

**BUSINESS INSTITUTIONS MAJOR**

Students interested in the broad field of business will be interested in this major. This is a fully prescribed program with a specific list of required courses:

ACC 201	Elementary Accounting I
ACC 202	Elementary Accounting II
BAC 110	Business Computing Applications (or CSC 101 Computing Concepts)
BAC 120	Introduction to Business Analysis and Applications (or MTH 131 Applied Calculus I)
BAC 201	Managerial Statistics I (or STA 308 Introductory Statistics)
BSL 333	Legal and Ethical Environment of Business I
ECN 201	Principles of Economics: Microeconomics
ECN 202	Principles of Economics: Macroeconomics
FIN 301	Financial Management
MGT 301	Organization and Management Theory I
MKT 301	Marketing Principles
MSI 309	Operations Management
WRT 227	Business Communications
Business Elective (3 credits)	

In addition to the courses above, students must elect one liberal elective course offered by a department outside their major. Most courses that fulfill these major requirements are available in Providence in the evening.

**HEALTH SERVICES ADMINISTRATION MAJOR**

Students interested in the broad field of health services will be interested in this major. Its prescribed courses fall into three parts:

**Core (13 credits)**

CSC 101	Computing Concepts
HDF 357	Family and Community Health
HSS 320	Introduction to Research in Human Science and Services
NUR 103	Professional Practice in Health and Illness

**Administration (15 credits)**

ACC 201	Elementary Accounting I
ACC 202	Elementary Accounting II
ECN 201	Principles of Economics: Microeconomics
ECN 202	Principles of Economics: Macroeconomics
PHL 314	Ethical Problems in Society and Medicine

**Experiential Seminars (12 credits)**

HSA 360	Health Services Administration
HSA 380	Introductory Practicum in Health Services Administration
HSA 480	Advanced Practicum in Health Services Administration [capstone]

**Professional Elective (3 credits)****HUMAN STUDIES MAJOR**

Students interested in the wide range of human studies or human services will be attracted to this major. It permits the student, working with an advisor, to design a major that will meet both personal and career goals. All human studies majors must have their program design approved in advance by an academic advisor and the program coordinator. It must include the following four parts:

**Social Science Core (24 credits).** Students are required to select 24 credits from three of the following departments in the College of Arts and Sciences: economics, history, political science, psychology, and sociology and anthropology; or coastal and marine policy in the College of the Environment and Life Sciences. These departments determine which of their courses are suitable for the B.G.S. major.

The 24 credits must be distributed as follows: four courses from one department, two courses from a second department, and two courses from a third. Only two prerequisite or introductory-level courses are allowed in the major. Students should meet with an advisor for more information regarding these courses.

**Methodology Course (3 credits).** Students are strongly advised to fulfill this requirement by taking HSS 320. In exceptional cases, students may be allowed to meet the methods requirement by taking HIS 495, PSY 300, SOC 301, or STA 220.

**Major Seminar (BGS 397 [capstone], 3 credits).** Students take this course near the end of their degree program. It will give them an opportunity to review and evaluate the skills and knowledge they have acquired through their major.

**Area of Emphasis (15 credits).** The area of emphasis provides the student with an opportunity to select a group of courses that focus on a particular problem or population of interest. Once a particular focus is identified, students select 15 credits from the following list. All 15 credits must be at or above the 300 level.

African and African-American studies  
Business law\*  
Coastal and marine policy  
Communication studies  
Community planning  
Computer science  
Consumer affairs  
Economics  
Education\*  
Food science and nutrition\*  
Health\*  
History  
Human development and family studies  
Human science and services  
Journalism  
Languages (French, Portuguese, Spanish)  
Management\*  
Marketing\*  
Nursing\*  
Political science  
Psychology  
Sociology and anthropology  
Women's studies

*\*In these departments, only certain courses are appropriate for the human studies major. See an advisor for details.*

## Registration and Admission

Enrollment in the college's courses is accomplished through telephone registration prior to the beginning of each semester. Being enrolled in a course is not the same as being admitted to the University. To apply for admission to an undergraduate degree program, a student must follow the application procedure stated below. However, credits earned through successful completion of courses may eventually be applied toward a degree program after a student is accepted as a degree candidate.

Beginning students who have been away from school for some time with little or no course work beyond high school are encouraged to register in the special entry course: BGS 100, the Pro-Seminar.

Any adult may enroll as a nonmatriculated student in ASFCCE. All courses at the University are open to nonmatriculated students; however, day courses at the Kingston Campus are open only on a space-available basis.

All information and forms necessary for registration are included in the semester course schedule printed before each term begins. The schedule contains up-to-date course offerings and fees, and is available during the registration periods; you may be also contact ASFCCE for one at 80 Washington Street, Providence, RI 02903; 401-277-5000; or [www.uri.edu/prov/](http://www.uri.edu/prov/).

**Application Procedures.** A student wishing to enroll in an undergraduate degree program at ASFCCE does so through the Advising and Admissions Office. An initial interview is recommended so that program options may be explored as well as the student's capabilities. A student then files an application for an undergraduate degree and provides this office with official transcripts.

Students admitted to undergraduate degree programs should consult with the appropriate faculty coordinator concerning their major. A worksheet of courses is prepared and maintained as a checklist

toward graduation requirements. It is the strict responsibility of the student to file an Intent to Graduate form with the Advising and Admissions Office three semesters in advance of the contemplated date.

**Performance Based Admission.** Performance Based Admissions (PBA) represents an opportunity to pursue a college degree for applicants who do not possess recent evidence of academic success, but whose potential suggests the ability to successfully complete college-level work. PBA is available to applicants possessing a high school (or equivalency) diploma whose last educational experience occurred at least three years ago. It is limited to students applying to an undergraduate degree program at ASFCCE.

Students must complete 15 credits before moving to fully matriculated status, and must meet with an advisor each semester prior to course registration until the 15 credits have been successfully completed. For more information, contact an ASFCCE academic advisor in room 245, 401-277-5160.

## Services for Students

The ASFCCE provides a number of services for students, including free academic advising, peer counseling, health education, and, at minimal cost, a testing service. Advisors are available to answer questions about registration, admissions, degree programs, the College Level Examination Program, and prior learning assessment. The peer counseling service provides students with the opportunity to meet with other adult students who have been trained to help in problem solving, including issues of minority groups and those with disabilities. In testing services, a staff of certified psychologists administers a number of psychological tests and evaluations to individuals and groups to help them make personal or career decisions.

The Providence Campus also has a bookstore and library, plus a comfortable student center where students and faculty can meet, talk, and relax.

## Fees and Finances

Tuition and fees for Continuing Education students are given on page 19 of this catalog. They may also be found in the course schedules for the current term. The registration fee is not refundable except when URI cancels or closes a course. The Student Services Fee supports a student government, career services, and various lectures and cultural events determined by an activities board of elected continuing education students. Fees for Special Programs courses vary (consult the course schedule or contact the Special Programs Office). For information on refunds, refer to page 22 of this catalog.

**Financial Aid.** Only matriculated students enrolled on at least a half-time basis (six credits) may be considered for an award. Student Financial Assistance determines eligibility for all grants, loans, and employment, which are awarded on an academic-year basis. Financial aid will be awarded only after a student has applied for a Pell Grant and has submitted a Pell Student Eligibility Report to this office.

A limited number of scholarships are available to students matriculating at ASFCCE. Students are required to complete a FAFSA application to be considered. For a brochure, call 401-277-5000.

## COLLEGE OF ENGINEERING

Arun Shukla, *Interim Dean*

Harold N. Knickle, *Associate Dean*

Richard M. Vandeputte, *Assistant Dean*

The College of Engineering offers undergraduate majors in biomedical, chemical, chemical and ocean, civil, computer, electrical, industrial, mechanical, and ocean engineering. In addition, an ocean option is available in mechanical engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman-year courses are quite similar for all curriculums, and the choice of a specific branch of engineering may be delayed until the beginning of either the second term or the second year of study. Students electing one of the programs that include ocean options follow the curriculum for chemical or mechanical engineering for two or three years and enroll in many ocean engineering courses in the junior and senior year.

All of the engineering curriculums are based on an intense study of mathematics, the basic sciences, and the engineering sciences common to all branches of the profession. On this base is built the in-depth study of the important principles and concepts of each separate discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law, business administration, or medicine, as well as the normal engineering and science disciplines.

The college's goal is to stimulate our students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in all branches of engineering. Engineers from all fields are heavily involved in the solution of technological and sociotechnological problems. The needs of industry

are for balanced teams of both men and women from the different engineering areas.

Entering students who have chosen a specific major should follow the particular program listed in this section. Those who have decided to major in engineering but have not selected a specific program should select the following courses: CHM 101 and 102, EGR 105, MTH 141, PHY 203 and 273, and a general education requirement.

Students who are undecided about engineering but wish to keep it open as an option should take note that MTH 141, 142; PHY 203, 204 and 273, 274; and a course in chemistry are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They must be taken before transferring from University College to the College of Engineering.

To transfer from University College to the College of Engineering, students must not only complete 24 credits with a quality point average of 2.00 or better, they must also complete all of the required mathematics, science, and engineering courses of the freshman year with a quality point average of 2.00 or better.

To meet graduation requirements, students enrolled in the College of Engineering must satisfactorily complete all courses of the curriculum in which they are registered and obtain a quality point average of 2.00 or better in all required science, mathematics, and engineering courses (including professional electives).

URI's curriculums in chemical, civil, computer, electrical, industrial, mechanical, and ocean engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

**College Mission Statement.** The mission of URI's College of Engineering is to provide high quality, undergraduate and graduate engineering programs that prepare students to work in a diverse, global marketplace; to establish and maintain nationally and internationally recognized programs of excellence in research; to provide

professional services and outreach that support the college's constituencies; and to provide an atmosphere of mutual respect for all students, faculty, and staff that allows them to realize their full potential.

**Freshman Year.** All engineering curriculums have similar programs during the freshman year. This provides some degree of flexibility to those students who are uncertain about their choice of curriculum. Except for the major in computer engineering, all engineering students take the following 16 credits in the first semester.

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 PHY 203 Elementary Physics I
- 1 PHY 273 Elementary Physics Laboratory I
- 1 EGR 105 Foundations of Engineering I
- 3 General Education requirement

Students who are still undecided about their choice of major after completing the first semester should review their choice of courses for the second semester with their advisor to be certain that they meet the prerequisites for the sophomore year.

**General Education Requirements.** Engineering students must meet URI's general education requirements listed on pages 32–33, except that only three credits are required in the foreign language or culture component. In these courses, students are exposed to and challenged by concepts from the humanities and social sciences to ensure that the social relevance of their engineering activities will never be forgotten. In selecting courses to satisfy these requirements, students should consult with their advisors to be certain that they have chosen courses which are on the College of Engineering list of approved courses. The requirements in mathematics and natural sciences are satisfied by required courses in the engineering curriculums. Three credits must be taken in the Foreign Language or Culture group, and six credits each in English Communication, Fine Arts and Literature, Letters, and Social Sciences.

**Computers.** The College of Engineering's Computer Center (located in the Kirk Building) has a dual processor SUN Enterprise 450 with 45GB disk storage, supporting 20 SUN Ultra 10 workstations and a Windows 2000 server supporting 60 Pentium-based PCs. These and all other departmental computers are linked together by a 100Mb switched Ethernet network. The Department of Electrical and Computer Engineering has three main servers, including a six-processor SUN Ultra Enterprise 3000 with 1.5GB RAM, a dual-processor SUN Ultra Enterprise 450, and a quad-processor SUN SPARCserver 450 with combined high-speed disk storage of over 125 GBtyes. These use a fully-switched fast-Ethernet network to serve a dual-processor SGI Origin 200, two SGI Indy workstations, over 25 SUN Ultra SPARC and SPARC 5 workstations, 20 Xterminals, and a variety of PCs and Macintoshes. The department also has the ACES Laboratory (Advanced Champlin Foundation-funded Computer Engineering and Science Laboratory) consisting of 25 high-end Dell PCs running Windows NT with high-end data/video projection capabilities. ACES is a joint project with the Department of Computer Science and Statistics. The Department of Mechanical Engineering has a CAE computer classroom with 25 PC workstations, two high speed printers, and a direct projection system. Several additional PC and SUN workstations are housed in specific laboratories within the department. The Department of Civil and Environmental Engineering has the CADD Laboratory, 22 state-of-the-art computers, two large format plotters and several printers. Newly released civil engineering software including AutoCAD is used in this laboratory. The Senior Design Studio has six computers used for the capstone project. The Department of Ocean Engineering has an undergraduate PC lab and a graduate lab with two SUN Sparc 5 workstations. Industrial and Manufacturing Engineering has two small PC labs, the Design for Manufacturing and Assembly Lab and the Manufacturing Computation Lab.

**International Engineering Program.** The College of Engineering also offers a five-year International Engineering Program (IEP) in which students earn two degrees: a Bachelor of Science in engineering and a Bachelor of Arts in a foreign language. The foreign languages currently available as part of the IEP are German, French, and Spanish. In addition to their engineering courses, students study the foreign language, business, and culture. They spend six months abroad in a professional internship in a European, Latin American, or Caribbean country. Upon graduation, students are well prepared to compete in the global marketplace. To enroll, a student simply registers for the appropriate language course for engineering students, and follows the recommended outline of courses. In 1992, the IEP was selected as the recipient of the Award for Educational Innovation by ABET, the national Accreditation Board for Engineering and Technology.

#### **Cooperative Education Program.**

Optional for juniors and seniors in all engineering departments, the Cooperative Education Program offers placements for part-time or full-time work directly related to a student's field of study. Enrollment information may be obtained from the Dean's Office, 102 Bliss Hall.

**Engineering and M.B.A. Program.** This five-year program offers students the opportunity to earn a Bachelor of Science in engineering and a Master of Business Administration. Students who have a 3.00 or better grade point average may enroll during their senior year with successful completion of the Graduate Management Admissions Test.

### **Biomedical Engineering**

The Bachelor of Science (B.S.) degree in biomedical engineering is offered by the Department of Electrical and Computer Engineering. Specialization in biomedical engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering.

**Coordinator:** Professor Sun (Electrical and Computer Engineering). Professors Boudreaux-Bartels, Jackson, Kumaresan, Mardix, Ohley, and Tufts; Assistant Professor Vetter; Adjunct Professors Aaron, Chiaramida, Gerwitz, and Lucariello.

Biomedical engineering is an interdisciplinary area in which engineering techniques are applied to problem solving in the life sciences and medicine. Biomedical engineers design medical instruments for diagnosis and the treatment of various diseases as well as for research in biology. Examples of instruments for diagnosis include electrocardiographs, electroencephalographs, automatic blood analyzers, and medical imaging systems such as X-ray imaging, radio-nuclide imaging, ultrasound imaging, computer-assisted tomography, and magnetic resonance imaging. Examples of instruments for treatment include radiotherapy machines, pacemakers, cardiac-assist devices, intelligent drug delivery systems, and lasers for surgery. Biomedical engineers develop artificial organs for prosthesis and various computer software and hardware systems to help provide high-quality, cost-effective health care.

Biomedical engineers are employed in the medical instrument industry, where they invent, design, manufacture, sell, and service medical equipment; hospitals, where they evaluate, select, maintain, and provide training for the use of complex medical equipment; and medical and biological research institutes, where they use unique analytical ability and instrumentation skills to conduct advanced research.

URI's biomedical engineering program combines study in the biological sciences with the areas of engineering that are particularly important for the application of modern technology to medicine. This curriculum is designed to provide students with not only a general background in biomedical engineering but also a special focus on the skills in electrical engineering necessary for developing medical devices. With a few minor elective changes, the program also satisfies the entrance require-

ments of most medical schools, but students who plan to go on to medical school should consult the premedical advisor and the coordinator of the biomedical engineering program.

For transfer from University College to the College of Engineering in the biomedical engineering program, students must have completed *all science, mathematics, and engineering courses required during the first two semesters* with a quality point average of 2.00 or better.

The major requires 135–136 credits.

### Minimum Requirements

*Humanities and Social Sciences* (27 credits): see the general education requirements for the College of Engineering on page 77. Students should consult with their advisors regarding distribution of credits and approved courses.

*Mathematics* (17 credits): MTH 141, 142, 243, 362, three credits of an MTH elective (215 or any 300- to 500-level mathematics course except MTH 381).

*Basic Sciences* (23 credits): CHM 101, 102, 124; PHY 203, 273, 204, 274; BIO 121, 442, 444.

*Computer Science* (4 credits): CSC 200.

*Engineering Sciences and Design* (61–62 credits): EGR 105, 106; ELE 201, 202, 205, 212, 215, 282, 305, 313, 314, 322, 342, 343, 382, 400, 482, 488, 489; two engineering electives (chosen from CHE 333, 347, 541, 574; CVE 220, 374; ELE 325, 331; IME 404, 411, 412; MCE 302, 341, or 354 or any electrical engineering design elective).

*Free Elective*: 3 credits.

#### Freshman Year

*First semester: 16 credits*

CHM 101 (3), 102 (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 17 credits*

ECN 201 (3), EGR 106 (2), MTH 142 (4), PHY 204 (3), 274 (1), and BIO 121 (4).

#### Sophomore Year

*First semester: 17 credits*

CHM 124 (3), CSC 200 (4), ELE 201 (3), 202 (1), MTH 362 (3), and general education requirement (3).

*Second semester: 18 credits*

ELE 205 (3), 212 (3), 215 (2), 282 (1), MTH 243 (3), and general education requirements (6).

#### Junior Year

*First semester: 18 credits*

ELE 313 (3), 342 (4), 305 (3), 382 (1), BIO 442 (3), 444 (1), and general education requirement (3).

*Second semester: 18 credits*

ELE 314 (3), 322 (3), 343 (5), 482 (1), engineering elective<sup>1</sup> (3), and general education requirement (3).

#### Senior Year

*First semester: 16–17 credits*

ELE 488 (4), electrical engineering design elective<sup>2</sup> (3–4), engineering elective<sup>1</sup> (3), mathematics elective<sup>3</sup> (3), and general education requirement (3).

*Second semester: 15 credits*

ELE 400 (1), 489 (4), electrical engineering design elective<sup>2</sup> (4), free elective (3), and general education requirement (3).

## Chemical Engineering

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical engineering that is accredited by ABET.<sup>4</sup> In cooperation with the Department of Ocean Engineering, the department offers a curriculum leading to the Bachelor of Science degree in chemical and ocean engineering (unaccredited). The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty*: Professor R. Brown, *chairman*. Professors S. Barnett, Bose, Gregory, Knickle, Lucia, and Rose; Associate Professors Gray, Greenfield, and Rivero-Hudec; Associate Research Professor Park; Adjunct Assistant

Professors Cohen, Crisman, Gow, Serdakowski, and Trevino; Professor Emeritus Rockett.

**Department Mission Statement and Program Objectives.** Consistent with missions of the University and the College of Engineering, URI's Department of Chemical Engineering seeks to prepare students to practice professionally in the fields of chemical engineering through the provision of high quality undergraduate and graduate educational programs, to provide an environment for satisfying faculty career development, and to maintain a world-renowned scholarly research program.

URI's Chemical Engineering program is more than just a collection of courses and credit hours whose content reflects the required criteria. The program has also been carefully designed to prepare students for the profession of chemical engineering through study, experience and practice. Through eight specific program goals, the Department of Chemical Engineering at URI seeks to:

1) provide the necessary background in science, particularly in chemistry and in physics and advanced mathematics through the study of differential equations so that students will be able to continue their education in the engineering sciences, with depth of understanding, and learn to apply these subjects to the formulation and solution of engineering problems;

2) provide a broad cross section of fundamental engineering science courses, including some from other engineering disciplines so that our students will acquire an understanding of the way in which chemistry, physics and mathematics have been and continue to be used to solve important engineering problems relevant to the general chemical engineering and engineering design;

3) provide students experience in conducting and planning experiments in the modern engineering laboratory including interfacing experiments with computers as well as interpreting the significance of resulting data and properly reporting results in well-written technical reports;

4) provide experience in the process of original chemical engineering design in the areas of equipment design, process design, and plant design through the process of formulating a design solution to a perceived need and then executing the design and evaluating its performance, including economic considerations and societal impacts if any, along with other related constraints, culminating in both written and oral presentations of results;

5) provide students experience with the multifaceted aspects of using computers to solve problems and present results with word processing, spreadsheet, presentation and professional-level applications software used for design and analysis and to provide for obtaining and the use of information on the World Wide Web;

6) provide students a familiarity with professional issues in chemical engineering including: ethics, issues related to the global economy and to emerging technologies, and fostering of important job-related skills such as improved oral and written communications and experience in working in teams at a number of levels;

7) encourage students to become actively engaged in the student chapter of the American Institute of Chemical Engineers and other student organizations, and to continue these associations after graduation with an emphasis on the importance of lifelong professional development including the desirability of attending graduate school or otherwise obtaining continuing or advanced education; and

8) make available continuous individual advising throughout the entire undergraduate educational experience to insure that each student makes the most of the educational opportunities provided by URI, particularly those related to general education electives that might enhance an engineering education, and special programs such as internships, cooperative experience and especially the International Engineering Programs in German, French and Spanish which are a unique opportunity available to globally motivated URI engineering students.

The chemical engineer is concerned with the application and control of processes leading to changes in composition. These processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include such seemingly unrelated matters as removal of toxic components from the blood by an artificial kidney, environmental cleanup, and semiconductor processing. The chemical engineer's domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics, and basic engineering. Chemical engineering courses include the use of digital computers, thermodynamics, transport phenomena, mass transfer operations, metallurgy, materials engineering, process dynamics and control, kinetics, and plant design. The student has the opportunity to operate small-scale equipment to determine efficiencies and operating characteristics, and to visit local industry. Intensive work in the solution of complex problems is given in which economics and optimization of engineering design are emphasized.

A chemical engineer with a background in both chemistry and engineering can apply knowledge of research and development, design, production, and manufacturing not only to the areas listed above, but to many others such as textiles, dyes, petroleum, ceramics, paint, and rubber, as well as biomedical, biochemical, ocean, space, nuclear energy, and environmental problems and processes. About 25 percent of graduates work in each of the following areas: chemical/energy, environment/ocean, biotechnology/pharmaceutics, and materials. While pursuing their undergraduate degrees, many are employed by the department's Pollution Prevention, Thin Film and Interfacial Research, and Process Engineering Centers on projects with industry.

The major requires 131–133 credits.

#### *Freshman Year*

*First semester: 16 credits*

CHM 101<sup>5</sup> (3), 102<sup>5</sup> (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), PHY 273 (1), and general education requirement<sup>6</sup> (3) (WRT 101 strongly recommended).

*Second semester: 17 credits*

CHM 112<sup>5</sup> (3), 114<sup>5</sup> (1), EGR 106 (2), MTH 142 (4), PHY 204 (3), 274 (1), and ECN 201 (3).

#### *Sophomore Year*

*First semester: 15–16 credits*

CHE 212 (3), CHM 291 (4) or CHM 227 (3), MTH 243 (3), and general education requirements<sup>6</sup> (6).

*Second semester: 15–16 credits*

CHE 272 (3), 313 (3), 332 (3), CHM 292 (4) or an approved advanced chemistry course (3), and MTH 244 or 362 (3).

#### *Junior Year*

*First semester: 17 credits*

CHE 314 (3), 347 (3), CHM 431 (3), 335 (2), approved mathematics elective (3), and general education requirement<sup>6</sup> (3).

*Second semester: 17 credits*

CHE 322 (2), 348 (3), 464 (3), CHM 432 or approved department elective<sup>7</sup> (3), and general education requirements<sup>6</sup> (6).

#### *Senior Year*

*First semester: 17 credits*

CHE 328 (1), 345 [**capstone**] (2), 349 (2), 351 [**capstone**] (3), 425 (3), ELE 220 (3), and approved professional elective (3).

*Second semester: 17 credits*

CHE 346 [**capstone**] (2), 352 [**capstone**] (3), one 3-credit approved professional elective, CVE 220 or an approved professional elective (3), and general education requirements<sup>6</sup> (6).

#### **Chemical and Ocean Engineering.**

Students enrolled in this curriculum follow the program of study for chemical engineering during their freshman, sophomore, and junior years. The senior year curriculum follows.

The major requires 134–136 credits.



*Senior Year**First semester: 18 credits*

CHE 328 (1), 349 (2), 351 [**capstone**] (3), 403 [**capstone**] (3), 464 (3), ELE 220 (3), and approved professional elective (3).

*Second semester: 19 credits*

CHE 352 [**capstone**] (3), 404 [**capstone**] (3), 534 (3), OCE 311 (4), and general education requirements<sup>6</sup> (6).

## Chemical and Ocean Engineering

See Chemical Engineering above.

## Civil Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in civil engineering. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in civil and environmental engineering. The Bachelor of Science program in civil engineering is accredited by the Accreditation Board for Engineering and Technology (ABET).

*Faculty:* Professor Veyera, *chairperson*. Professors Kovacs, K. Lee, Silva, Tsiatas, Urish, and R. Wright; Associate Professors Karamanlidis, Marcus, and Thiem; Assistant Professors Baxter, Hunter, and Thomas; Adjunct Professors Harr, O'Neill, and T. Wright; Adjunct Associate Professor Huston; Adjunct Assistant Professors Badorek, Franco, George, Mogawer and Osborn; Professors Emeriti McEwen, Moultrap and Poon.

**Program Mission Statement and Educational Objectives.** URI's Bachelor of Science program in Civil Engineering will prepare graduates for successful careers and advanced graduate studies based upon a solid foundation of technical ability, high standards of professional ethics, and strong communications skills. The program has a number of objectives. Graduates with the B.S. degree in civil engineering will have:

1) An appropriate fundamental understanding of mathematics, physics, chemistry, geology, and other basic sciences;

2) Basic computer skills consistent with applications to civil engineering problem solving;

3) Basic engineering knowledge across a range of subjects including mechanics, mechanics of materials, engineering construction materials, statics, dynamics, fluid mechanics, and CADD;

4) An understanding of basic economics, together with approaches to economics based decision-making;

5) A working knowledge of probability and statistics as applied to civil engineering problems;

6) Basic technical proficiency in at least four of the recognized civil engineering focus areas;

7) An understanding of the intra-disciplinary approach in civil engineering problem-solving and design at the design project level through an integrated capstone design project experience;

8) Experience with individual and team based approaches to civil engineering problem solving in the classroom, laboratory, and through an integrated capstone design project experience;

9) Practical and hands-on laboratory experience solving civil engineering problems involving measuring physical phenomena and interpreting results;

10) An understanding of ethics of engineering activities, professional standards and responsibilities, the relationships between engineering and society in general, and the necessity for lifelong learning;

11) Well-developed written communication skills, and experience with oral communications both individually and on teams;

12) A broad understanding and global perspective of society in general by exposure to fine arts, literature, letters, foreign language or culture, social science, and English communication; and

13) An opportunity to obtain membership in and become active in the student chapter of the American Society of Civil Engineers, develop teamwork and leadership skills, and participate in service activities related to the local community and the civil engineering professional society.

Civil engineers are responsible for researching, developing, planning, designing, constructing, and managing many of the complex systems and facilities essential to modern civilization. These include: environmental engineering systems; water supply and pollution control systems; all types of transportation systems, from pipelines to city streets; structural systems from residential buildings to city skyscrapers, power plants, and offshore platforms; and all types of geotechnical systems from foundations to dams. Civil engineers play important roles in planning and administration with government agencies at all levels, especially those dealing with public works, transportation, environmental control, water supply, and energy.

The curriculum provides students with an excellent background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first year is devoted largely to courses in mathematics, chemistry, physics, and engineering science common to all engineering curriculums. During the sophomore year, students take five courses in civil engineering including CADD, Surveying, Mechanics of Materials and two laboratories. In their last two years, students develop a proficiency in environmental engineering, geotechnical engineering, structural engineering, and transportation engineering. They can also meet their own professional goals through the selection of professional electives in these areas as well as construction. Professional electives are selected in consultation with the student's advisor to satisfy ABET accreditation requirements.

The major requires 130 credits.

*Freshman Year**First semester: 16 credits*

CHM 101 (3), 102 (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), 273 (1), and general education requirement (COM 101 or WRT 101) (3).

*Second semester: 16 credits*

EGR 106 (2), MTH 142 (4), PHY 204 (3), 274 (1), ECN 201 (3) (S), and general education requirement (3).

*Sophomore Year**First semester: 16 credits*

MTH 243 (3), MCE 262 (3), CVE 250 (3), 251 (1), 315 (3), and general education requirement (3).

*Second semester: 17 credits*

MTH 244 (3), CVE 220 (3), 221 (1), MCE 263 (3), GEO 103 (4), and general education requirement (3).

*Junior Year**First semester: 18 credits*

CVE 346 (3), 354 (4), 374 (3), 375 (1), 381 (3), 382 (1), and MCE 354 (3).

*Second semester: 14 credits*

CVE 370 (3), 371 (1), 347 (3), 348 (1), general education requirement (3), and one 3-credit professional elective (see below).

*Senior Year**First semester: 18 credits*

CVE 465 (3), 466 (1), 497 [**capstone**] (2), STA 409 (3), general education requirements (6), and one 3-credit professional elective (see below).

*Second semester: 15 credits*

CVE 483 (3), 498 [**capstone**] (3), free elective (3), general education requirement (3), and one 3-credit professional elective (see below).

**Professional Electives.** Three of the nine credits of required professional electives must be selected from the following courses: CVE 470, 471, 475, 478. The remaining six credits are to be selected from the list in the Civil Engineering Undergraduate Student Handbook. It is recommended that students consider selecting from the Civil Engineering professional elective courses to satisfy the free elective requirement.

**General Education Courses.** Civil engineering students, in conjunction with their advisor, select their general education courses in accordance with University and College of Engineering approved courses.

## Computer Engineering

The Bachelor of Science (B.S.) degree in computer engineering is offered by the Department of Electrical and Computer Engineering and is accredited by the Accreditation Board for Engineering and Technology. Specialization in computer engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering.

**Coordinator:** Professor Lo (Electrical and Computer Engineering). Professors Ohley, Sun, Tufts, and Yang; Research Professor Uht; Professor Emeritus Sadasiv.

Computers and other digital systems have transformed society. They are used in almost every device manufactured, from teraflop multicomputers to cell phones to greeting cards. Other examples are signal-processing functions in numerically controlled machine tooling, computer-aided machine design, tomography (CAT scans) and medical imaging (ultrasound), speech analysis and synthesis, and picture and data communication. The Internet and the World Wide Web are possible due to the rapid advances in computing and communication made in the last two to three decades.

Computer engineering is concerned with the design, efficient use, and research of all sizes and manner of computers and digital systems. The computer engineer must understand the fundamentals of computer logic and programming, as well as the fundamentals of electronics and general engineering—mathematics, mechanics, electricity and magnetism, and heat transfer. Engineers use all of this knowledge to create new devices and systems that satisfy human needs.

The URI computer engineering program offers a unique experience for students desiring hardware and software computer engineering design skills, as well as the underlying theoretical knowledge to create richly complex and competitive digital systems.

The objectives of the computer engineering program at URI are to produce graduates who can practice computer engineering in state and regional industries, government agencies, and national and international industries; give them the necessary background and technical skills to work professionally in hardware and software design, computer-based systems, network design, system integration, and/or electronic design automation; prepare students to succeed in advanced degree programs in fields such as engineering, science, and business; and finally prepare all our graduates for personal and professional success with awareness and commitment to their ethical and social responsibilities, as individuals and in team environments.

A key ingredient to successful digital system design is making appropriate design tradeoffs among the hardware and software components of the system to achieve a suitably-performing cost-effective design. The exact nature of the latter varies from problem to problem.

Design is a major component of URI's Integrated Computer Engineering Design curriculum (ICED). ICED provides a unified thrust for the computer engineering student, tying together what is traditionally unrelated content from different courses. Over the duration of studies, a student will design and build an actual complete, working computer including both the processor and the compiler. Thus, the computer will be able to execute high-level language programs. Several students' computers are connected together in a network as part of the final system design.

The design tasks to achieve these aims are distributed among the following required core courses: ELE 201/202, 305, 405, 408, 437, and CSC 402. Students may also incorporate work from CSC 412 and ELE 447 in the overall project. By arrangement with major design companies, industrial computer-aided design tools are used throughout the student's computer design process. State-of-the-art computers and laboratory equipment, including logic analyzers, are also used.

ICED is partially funded by the National Science Foundation and is offered with the support of the Department of Computer Science and Statistics and the Instructional Development program. More information is available via the department's Web site at [ele.uri.edu/iced](http://ele.uri.edu/iced).

Students without computer programming experience are advised to take a general education elective and CSC 201 in the freshman year and postpone CSC 211 and CSC 212 until the sophomore year.

To transfer from University College to the College of Engineering's computer engineering program, students must have completed *all science, mathematics, and engineering courses required during the first two semesters* with a quality point average of 2.00 or better.

### Minimum Requirements

*Humanities and Social Sciences* (27 credits): see the general education requirements for the College of Engineering, listed on page 77. Students should consult their advisors regarding distribution of credits and approved courses. (ECN 201 is included in the 27-credit total.)

*Mathematics* (17 credits): MTH 141, 142, 243, 362, 447.

*Basic Sciences* (16 credits): CHM 101, 102; PHY 203, 273, 204, 274, 205, 275.

*Computer Science* (20 credits): CSC 211, 212, 301, 402, 412.

*Engineering Sciences and Design* (42 credits): ELE 201, 202, 205, 212, 215, 305, 306, 342, 405, 408, 437; IME 411 or MTH 451; engineering elective,<sup>8</sup> computer engineering electives.<sup>9</sup>

The major requires 131–133 credits.

#### Freshman Year

*First semester: 17 credits*

CSC 211 (4), MTH 141 (4), CHM 101 (3), 102 (1), PHY 203 (3), 273 (1), and EGR 105 (1).

*Second semester: 17 credits*

CSC 212 (4), MTH 142 (4), PHY 204 (3), 274 (1), ECN 201 (3), and EGR 106 (2).

#### Sophomore Year

*First semester: 17 credits*

ELE 201 (3), 202 (1), MTH 362 (3), PHY 205 (3), 275 (1), and general education requirements (6).

*Second semester: 17 credits*

ELE 205 (3), 212 (3), 215 (2), MTH 243 (3), and general education requirements (6).

#### Junior Year

*First semester: 15 credits*

ELE 305 (3), 306 (2), 342 (4), IME 411 or MTH 451 (3), and general education requirement (3).

*Second semester: 17 credits*

ELE 405 (4), 437 (3), MTH/CSC 447 (3), CSC 301 (4), and general education requirement (3).

#### Senior Year

*First semester: 16–17 credits*

CSC 402 (4), computer engineering elective (3–4), engineering elective (3), free elective (3), and general education requirement (3).

*Second semester: 15–16 credits*

CSC 412 (4), ELE 400 (1), ELE 408 (4), computer engineering elective (3–4), and general education requirement (3).

## Electrical Engineering

The Department of Electrical and Computer Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Vaccaro, *chairperson*. Professors Boudreaux-Bartels, Daly, Fischer, L. Jackson, Kay, Kumaresan, Lo, Mardix, Mitra, Ohley, Sun, Sunak, Swaszek, Tufts, and Q. Yang; Assistant Professor Vetter; Adjunct Professors Aaron, Banerjee, Cooley, Gerwitz, Middleton, Most, and Turtle; Adjunct Assistant Professors Davis and Sepe; Professors Emeriti Lengyel, Lindgren, and Sadasiv.

The objectives of URI's electrical engineering program are to produce graduates who can practice electrical engineering in service to state and regional industries, government agencies, and national and international industries; give our students the necessary background and technical skills to work professionally in analog electronics, digital electronics, communication systems, computer-based systems, and/or control systems; prepare them for personal and professional success with awareness and commitment to their ethical and social responsibilities, as individuals and in team environments; and to prepare graduates for success in advanced degree programs such as engineering, science, or business.

Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are not only employed in the computer, electronics, communications, and power industries, but may also be found in diverse enterprises such as transportation, the chemical industry, large hospitals, and government laboratories.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in network and systems theory, atomic physics and solid state, electromagnetic theory, and electronics. Creative use of scientific principles in problems of engineering design is stressed, particularly in the senior year. The development of computer hardware and software is a part of many electrical engineering courses.

Extensive laboratory work serves to bridge the gap between mathematical analysis and the real world of "hardware." Separate undergraduate laboratories are available for electrical measurements, electronics, pulse and digital circuits, microprocessors, control systems, optics, and electronic materials.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives that do not have to satisfy any of the general education requirements. Although the natural science

requirement will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional courses in mathematics or physics for which the prerequisites have been satisfied.

To transfer from University College to the College of Engineering's electrical engineering program, students must have completed *all science, mathematics, and engineering courses required during the first two semesters* with a quality point average of 2.00 or better.

### Minimum Requirements

*Humanities and Social Sciences* (27 credits): see the general education requirements listed on page 77. Students should consult with their advisors regarding distribution of credits and approved courses. (ECN 201 is included in the 27-credit total.)

*Mathematics* (17 credits): MTH 141, 142, 243, 362; three credits of an MTH elective (215 or any 300- to 500-level mathematics course except MTH 381).

*Basic Sciences* (19 credits): CHM 101, 102; PHY 203, 273, 204, 274, 205, 275, 306.

*Computer Science* (4 credits): CSC 200.

*Engineering Sciences and Design* (61–63 credits): EGR 105, 106; ELE 201, 202, 205, 212, 215, 305, 313, 314, 322, 331, 342, 343, 400; one engineering elective (chosen from CHE 332, 437; CSC 305; CVE 220; ELE 325; IME 404, 411, 412; MCE 302, 341, 354; OCE 310, 471); or an additional engineering design elective; five electrical engineering design electives (chosen from ELE 401, 405, 408, 423, 427, 432, 436, 437, 444, 447, 457, 458, 488, 489; two of these courses must be chosen from ELE 408, 427, 444, 447, 458, or 489).

*Free Elective*: 3 credits.

The major requires 131–133 credits.

#### Freshman Year

*First semester: 16 credits*

EGR 105 (1), CHM 101 (3), 102 (1), MTH 141 (4), PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 17 credits*

EGR 106 (2), ECN 201 (3), MTH 142 (4), PHY 204 (3), 274 (1), and CSC 200 (4).

#### Sophomore Year

*First semester: 17 credits*

MTH 362 (3), PHY 205 (3), 275 (1), ELE 201 (3), 202 (1), and general education requirements (6).

*Second semester: 17 credits*

ELE 205 (3), 212 (3), 215 (2), MTH 243 (3), PHY 306 (3), and general education requirement (3).

#### Junior Year

*First semester: 16 credits*

ELE 305 (3), 313 (3), 331 (3), 342 (4), and general education requirement (3).

*Second semester: 17 credits*

ELE 314 (3), 322 (3), 343 (5), general education requirement (3), and mathematics elective<sup>3</sup> (3).

#### Senior Year<sup>10</sup>

*Total credits for two semesters: 31–33*

ELE 400 (1), engineering elective<sup>11</sup> (3), general education requirements (6), free elective (3), and electrical engineering design electives<sup>12</sup> (18–20).

## Industrial Engineering

The Department of Industrial and Manufacturing Engineering offers an ABET-accredited curriculum leading to the Bachelor of Science (B.S.) degree in industrial engineering. The department also offers the Master of Science (M.S.) degree in manufacturing engineering, which is ABET-accredited, and the Doctor of Philosophy (Ph.D.) in industrial and manufacturing engineering.

*Faculty*: Professor Sodhi, *chairperson*.

Professors Dewhurst and Knight; Associate Professors Shao and J. Wang; Assistant Professor Stucker; Adjunct Associate Professor Olson.

### Program Mission Statement and Educational Objectives.

Consistent with the mission of the Department of Industrial and Manufacturing Engineering, URI's B.S. program in industrial engineering will prepare graduates for a successful career in the field based on a foundation of technical ability, high ethical standards and good communications skills. Students are amply prepared to pursue careers in industrial or manufacturing engineering, areas that are becoming increasingly important in efforts to improve industrial productivity in the United States. The curriculum also provides an excellent background for further formal study at an advanced level. Graduates from the B.S. program will have:

1) Appropriate fundamental understanding of mathematics, physics, chemistry and other basic sciences;

2) Basic computer skills consistent with application to industrial engineering problem solving;

3) Basic engineering knowledge across a range of subjects including mechanics, materials, thermodynamics and electrical circuits;

4) Understanding of basic economics and accounting, together with approaches to economics based decision-making;

5) Thorough grounding in probability and statistics as applied to industrial engineering problems;

6) Practice in designing, developing and analyzing integrated systems that involve people, materials, equipment and energy;

7) Knowledge of basic manufacturing processes and the relationship between product design and manufacturing efficiency;

8) Advanced knowledge in student-selected topics in industrial engineering, manufacturing engineering and other related disciplines;

9) Experience with individual and team-based engineering problem solving;

10) Practical and hands-on experience solving engineering problems involving measuring physical phenomena and interpreting results;

11) Understanding of ethics of engineering activities;

12) Understanding of the relationships between engineering and society in general;

13) Understanding of the necessity for lifelong learning;

14) Well-developed written communication skills and experiences of oral communications both individually and in groups; and

15) Broad understanding of society in general by exposure to fine arts, literature, history, philosophy, social science and foreign cultures.

**Program Curriculum.** The industrial and manufacturing engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, together with a carefully coordinated set of courses of particular importance to the professional industrial or manufacturing engineer. Mathematical modeling of production systems and fundamental treatments of important manufacturing processes and assembly are included. Robotics, computer-aided manufacturing, and product design for manufacturability and assembly are areas that receive considerable attention.

The major requires 128 credits.

#### *Freshman Year*

*First semester: 16 credits*

CHM 101 (3), 102 (1), PHY 203 (3), 273 (1), EGR 105 (1), MTH 141 (4), and general education requirement (3).

*Second semester: 16 credits*

ECN 201 (3), EGR 106 (2), MTH 142 (4), PHY 204 (3), 274 (1), and general education requirement (3).

#### *Sophomore Year*

*First semester: 18 credits*

ECN 202 (3), IME 220 (3), 325 (3), MCE 262 (3), MTH 243 (3), and free elective (3).

*Second semester: 18 credits*

CVE 220 (3), ELE 220 (3), IME 240 (3), MCE 263 (3), MTH 362 (3), and basic science elective<sup>13</sup> (3).

#### *Junior Year*

*First semester: 15 credits*

CHE 333 (3), IME 404 (3), 411 (3), 432 (3), and MCE 341 (3).

*Second semester: 15 credits*

ACC 201 or 321 (3), IME 412 (3), 433 (3), 392 (3), and EGR 316 (3).

#### *Senior Year*

*First semester: 15 credits*

IME 451 (3), 449 (3), professional elective (3), and general education requirements (6).

*Second semester: 15 credits*

IME 452 (3), professional electives (6), and general education requirements (6).

General education (indicated in several places above) refers to the electives in the University's general education program, required in all curriculums leading to a bachelor's degree.

## Mechanical Engineering

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering and, in cooperation with the Department of Ocean Engineering, a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering with an ocean engineering option. The B.S. degree in mechanical engineering is accredited by the Accreditation Board for Engineering and Technology. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in mechanical engineering and applied mechanics.

*Faculty:* Professor Shukla, *chairperson*. Professors Datseris, Faghri, Ghonem, T. Kim, Lessmann, W. Palm, Sadd, and Z. Zhang; Associate Professors Ibrahim, Jouaneh, and Taggart; Assistant Professor Chelidze, D. Meyer, and C. Rousseau; Adjunct Assistant Professors Tucker and Vallee.

## Department Mission and Program

**Objectives.** URI's Mechanical Engineering department fully follows the college's mission statement (see page 77). The University's mechanical engineering program is more than just a collection of courses and credit hours; it has been carefully designed to prepare students for the profession of mechanical engineering through study, experience and practice. Although strong educational objectives existed in the program for many years, the department recently carefully reviewed and redeveloped its objectives. URI's mechanical engineering program is structured to:

1) Provide the necessary background in science, particularly in physics and chemistry, and in advanced mathematics so that students will be able to successfully pursue and complete their education with a depth of understanding to allow for proper formulation and solution of engineering problems;

2) Provide a broad cross section of fundamental engineering science education from several other engineering disciplines, so that students will acquire an understanding of the way in which science and math are used to solve engineering problems relevant to not only mechanical but other engineering fields;

3) Develop competency in conducting and in planning experiments in the engineering laboratory including interfacing experiments with computers as well as interpreting the significance of resulting data and properly reporting results in well written technical reports;

4) Provide design experience in the two core areas of mechanical systems and thermal systems by formulating a design solution to a perceived need, executing the design and evaluating its performance, possibly including manufacturing, economic and societal impact considerations, and culminating in effective communication of results;

5) Develop competency in the use of computers to solve design and analysis problems, and to effectively present results

using word processing, spreadsheet and presentation software.

6) Provide a broad educational experience which will allow students to understand the impact and interaction of engineering activities within the local and global society, including business, economic, ethical and societal issues.

7) Initiate and encourage professional development and other job-related skills through activities including the American Society of Mechanical Engineers and other student organizations, University Career Services programs, and working in teams; and emphasize the importance of continuous lifelong professional development including graduate school and/or other post-baccalaureate education;

8) Furnish individual advising to insure that each student makes the most of the University's educational opportunities, particularly those related to general education electives, special internship/cooperative work experience programs, and especially our unique International Engineering Programs; and

9) Provide an understanding and appreciation of diversity, and maintain an educational environment of mutual respect that will allow students of varying background, gender, race and culture to perform to the best of their abilities, prepared to work in a diverse and global marketplace.

The curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate for a professional engineering career. The curriculum is also excellent preparation for graduate school. The program is strong in providing a background in design, solid and fluid mechanics, systems engineering, and the thermal sciences, including energy and energy transfer. Computer applications are stressed throughout the curriculum. All undergraduates are invited and encouraged to join the student section of the American Society of Mechanical Engineers, which sponsors industrial plant visits,

special lectures, and other activities. Students may also join chapters of the Society of Automotive Engineers, the American Society of Heating, Refrigerating, and Air Conditioning Engineers, and the Society for Experimental Mechanics.

The work in the first two years consists of basic courses in science (math, physics, chemistry), applied science (mechanics, electricity and magnetism, basic computer literacy and computer-aided problem solving), and general education requirements (humanities, social sciences, English communication). A pair of introductory engineering courses are included in the freshman year.

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials sciences, and design of machines. Further general education studies are also covered.

The senior year in mechanical engineering includes heat transfer, manufacturing processes, mechanical systems design, thermal systems design, and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, microprocessor applications, internal combustion engines, alternate energy systems including solar and wind energy, power plants, air conditioning, heating and ventilation, vibrations, finite element method, and experimental stress analysis. The program also includes three laboratory courses in the junior and senior years, which introduce experimental techniques and provide practical experience with the engineering phenomena covered in the classroom.

Computer techniques are integrated throughout the curriculum. Computational facilities including personal computers and workstations are available in the College of Engineering's Computer Center and the University's Office of Information Services. The department's computer classroom provides state-of-the-art hardware and software for simulation, design, and product development.

To receive the Bachelor of Science degree in mechanical engineering, the student must satisfactorily complete all the courses in the following curriculum, which requires 129 credits.

#### *Freshman Year*

*First semester: 16 credits*

CHM 101 (3), 102 (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), 273 (1), and WRT 101 (3).

*Second semester: 16 credits*

COM 101 (3), ECN 201 (3), EGR 106 (2), MTH 142 (4), PHY 204 (3), and 274 (1).

#### *Sophomore Year*

*First semester: 16 credits*

EGR 316 (3), MCE 201 (3), 262 (3), MTH 243 (3), PHY 205 (3), and 275 (1).

*Second semester: 15 credits*

CVE 220 (3), ELE 220 (3), MCE 263 (3), MTH 244 (3), and general education requirement (3).

#### *Junior Year*

*First semester: 15 credits*

CHE 333 (3), MCE 301 (3), 341 (3), 372 (3), and general education requirement (3).

*Second semester: 18 credits*

MCE 302 (3), 313 (3), 354 (3), 366 (3), and general education requirements (6).

#### *Senior Year*

*First semester: 18 credits*

IME 340 (3), MCE 401 [capstone] (3), 414 (3), 448 (3), and professional electives<sup>14</sup> (6).

*Second semester: 15 credits*

MCE 402 [capstone] (3), professional electives<sup>14</sup> (6), free elective (3), and general education requirement (3).

**Mechanical Engineering with an Ocean Engineering Option.** Students enrolled in this curriculum follow the mechanical engineering program above for their freshman and sophomore years, and then the following curriculum. This major requires 130 credits.

*Junior Year**First semester: 15 credits*

CHE 333 (3), MCE 301 (3), 341 (3), 354 (3), and 372 (3).

*Second semester: 16 credits*

MCE 302 (3), 366 (3), OCE 307 (3), 311 (4), and OCG 451 (3).

*Senior Year**First semester: 18 credits*IME 340 (3), MCE 401 [capstone] (3), 448 (3), ocean engineering elective<sup>15</sup> (3), and general education requirements (6).*Second semester: 18 credits*MCE 402 [capstone] (3), OCE 471 (3), professional elective<sup>16</sup> (3), free elective (3), and general education requirements (6).**Ocean Engineering**

The Department of Ocean Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in ocean engineering; this program is accredited by the Accreditation Board for Engineering and Technology and is open to qualified students under the New England Regional Student Program. URI's Department of Ocean Engineering is nationally and internationally recognized as one of the leaders in ocean engineering, and also offers Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Grilli, *chairperson*. Professors Hu, Miller, Spaulding, Stepanishen, and Tyce; Associate Professor Moran; Assistant Professor Baxter; Research Professor Silva; Adjunct Professors Shonting and Sullivan; Adjunct Associate Professor Uhlman; Adjunct Assistant Professor Vincent; Professors Emeriti Kowalski, Middleton, and Sheets.

**Department Mission Statement and Educational Objectives.**

The Department of Ocean Engineering's missions are to provide high-quality undergraduate and graduate degree programs that prepare our students for professional careers in

ocean engineering in industry, academia, and government; to develop and maintain internationally recognized research programs in selected areas of ocean engineering; to actively serve the profession and community in our areas of expertise; and to provide a challenging work and learning environment where diversity, community, scholarship, professional development, and excellence are valued and rewarded.

The program is designed to provide students with a strong base in fundamental sciences, mathematics, and engineering; a broad base in ocean engineering; opportunities for the integration of theory, experimentation, and design; appreciation of ethical, social and environmental issues in the practice of the profession; and strong oral and written communication skills. The educational goals for the B.S. program—developed in consultation with the department's advisory board, alumni, graduate employers, and students—are to provide:

- 1) Appropriate fundamental understanding of mathematics, physics, chemistry, and other basic sciences;
- 2) Computer skills appropriate to ocean engineering problem solving, design, and data collection and analysis systems;
- 3) Basic engineering knowledge across a range of subjects including mechanics, dynamics, materials, and electrical circuits;
- 4) Understanding of fundamental probability and statistics as applied to ocean engineering problems;
- 5) Understanding and use of ocean instrumentation;
- 6) Practice in the design, execution and analysis of laboratory and field experiments;
- 7) Knowledge of advanced applied mathematics;
- 8) Knowledge of wave dynamics and forces;
- 9) Understanding of marine geomechanics, hydrostatics, hydrodynamics, oceanography and underwater acoustics;
- 10) Understanding of ocean engineering design including sonars, marine structures, and ocean data collection systems;

11) Experience in design of an integrated ocean engineering system with exposure to economic considerations;

12) Advanced knowledge in selected topics in ocean engineering through professional electives;

13) Experience with individual and team-based engineering problem solving;

14) Understanding of ethics in the practice of engineering and the relationship between engineering and society, as well as knowledge of contemporary issues;

15) Understanding of the necessity of lifelong learning;

16) Well-developed written and oral communication skills; and

17) Understanding of the need for diversity in the national and international engineering workplace.

URI's curriculum provides a basic ocean engineering program that gives students a firm base in engineering fundamentals and prepares them for direct entry into a professional career or continued study toward a graduate degree. The required ocean engineering courses begin at the freshman level and include laboratory, analysis, and design courses. The total design component must include at least 17 credits. There is a strong emphasis on the application of scientific principles in the ocean environment gained through laboratory courses. Experiments covering several basic areas are employed and provide an integrated approach to investigations into ocean phenomena and processes. Students are involved in the planning and execution of experiments, including collection and analysis of data and the reporting of results. This hands-on experience provides graduates with an understanding of ocean engineering activities in scientific and industrial fields. Two ocean engineering professional elective courses are also required.

The broad-based program exposes students to the following topics: ocean instrumentation and data analysis, underwater and sub-bottom acoustics, marine hydrodynamics, coastal and near shore processes, marine geomechanics, coastal and offshore structures, and corrosion.

To ensure that each student gains an in-depth knowledge of one of the ocean engineering disciplines, the curriculum allows sequences of courses in hydrodynamics, structures, geomechanics, acoustics, instrumentation, and data analysis. An Ocean Systems Design Project course in the senior year integrates previously obtained knowledge in a comprehensive design project. This experience may be obtained through an on-campus course, by participating in an ongoing research project, or through an off-campus internship in an ocean-oriented private company or government laboratory; this internship allows interested students to take advantage of the many opportunities available in the region.

The Department of Ocean Engineering is located at the University's Narragansett Bay Campus. Computational facilities include personal computer and workstation rooms networked and connected to the Engineering Computer Laboratory and Office of Information Services. Extensive laboratory facilities are also available. The department operates an 80-foot research

vessel equipped with a fully integrated side-scan sonar mapping system. This vessel is used for both lab courses and research. A 100-foot tow and wave tank and a large acoustics tank are located on the Bay Campus, as well as an electronics shop, machine shop, and the Marine Geomechanics Laboratory.

This major requires 128 credits.

#### *Freshman Year*

##### *First semester: 16 credits*

CHM 101 (3), 102 (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), 273 (1), and general education elective (3).

##### *Second semester: 17 credits*

ECN 201 (3), EGR 106 (2), MCE 262 (3), MTH 142 (4), OCE 101 (1), PHY 204 (3), and 274 (1).

#### *Sophomore Year*

##### *First semester: 16 credits*

MCE 263 (3), MTH 243 (3), OCE 215 (1), PHY 205 (3), and general education electives (6).

#### *Second semester: 16 credits*

CVE 220 (3), ELE 220 (3), MTH 244 (3), OCE 216 (1), OCG 451 (3), and general education elective (3).

#### *Junior Year*

##### *First semester: 15 credits*

CHE 333 (3), IME 411 (3), MCE 354 (3), OCE 301 (3), and 310 (3).

##### *Second semester: 16 credits*

EGR 316 (3), OCE 307 (3), 311 (4), 471 (3), and general education elective (3).

#### *Senior Year*

##### *First semester: 17 credits*

OCE 416 (2), 421 (3), 495<sup>17</sup> (3), general education elective (3), and professional electives<sup>18</sup> (6).

#### *Senior Year*

##### *Second semester: 15 credits*

OCE 496<sup>17</sup> (3), free elective (3), professional electives<sup>18</sup> (6), and general education elective (3).

<sup>1</sup> May be chosen from any two of the following: CHE 333, 347, 541, 574; CVE 220, 374; ELE 325, 331; IME 404, 411, 412; MCE 302, 341, or 354, or any electrical engineering design elective.

<sup>2</sup> May be chosen from any two of the following: ELE 401, 405, 408, 427, 432, 436, 437, 444, 447, 457, or 458.

<sup>3</sup> A math elective is MTH 215 or any 300- to 500-level mathematics course except MTH 381. MTH 451 is recommended as a mathematics elective.

<sup>4</sup> Accreditation Board for Engineering and Technology through its Engineering Accreditation Commission in cooperation with the Committee on Education and Accreditation of the American Institute of Chemical Engineers.

<sup>5</sup> CHM 191, 192 (10 credits) may be substituted for CHM 101, 102, 112, and 114 (8 credits).

<sup>6</sup> In order to meet accreditation requirements, these courses, together with at least 18 credits of the general education requirements, must be chosen from a group approved by the chairperson, with the approval of an advisor designated by the chairperson.

<sup>7</sup> The elective must meet accreditation requirements. OCG 451 is required for chemical and ocean engineering majors.

<sup>8</sup> One of the following: CHE 332, 437; CVE 220; ELE 325; IME 404, 412; MCE 302, 341, 354; and OCE 310 or an additional computer engineering elective.

<sup>9</sup> Computer engineering electives—six or more credits from the following courses: any ELE 300- or 400-level course not otherwise required by the major, and CSC 305, 406, 415, 436, 481.

<sup>10</sup> See your advisor for help in preparing a suitable senior-year program.

<sup>11</sup> One of the following courses: CHE 332, 437; CSC 305; CVE 220; ELE 325; IME 404, 411, 412; MCE 302, 341, 354; and OCE 310, 471; or an additional electrical engineering design elective.

<sup>12</sup> Electrical engineering design electives may be chosen from any five of the following: ELE 401, 405, 408, 423, 427, 432, 436, 437, 444, 447, 457, 458, 488, 489. However, two of the courses must be chosen from ELE 408, 427, 444, 447, 458, or 489, and of these two, one must be chosen from ELE 408, 427, or 447.

<sup>13</sup> Any course for which the prerequisite is met by CHM 101, including PHY 205, 223, and 275; any physics course at or above the 300 level; or any course in astronomy, biochemistry, biology, botany, geology, microbiology, or zoology. Any other course must be approved by an advisor.

<sup>14</sup> Professional electives must be satisfied by a minimum of three three-credit elective courses in mechanical engineering. The fourth course may be a 300-, 400-, or 500-level course offered by: the College of Engineering (except OCE 346 and 347); or the Departments of Chemistry, Computer Science and Statistics, or Physics; or the Department of Mathematics (one 400- or 500-level course).

<sup>15</sup> One course must be selected from OCE 421, 495, 510, 522, 534, or 561.

<sup>16</sup> May be satisfied by any 400-level mechanical engineering course.

<sup>17</sup> An approved off-campus experience, usually between the junior and senior years, can be substituted for OCE 495 and 496.

<sup>18</sup> The requirement for professional electives must be satisfied by a minimum of two approved three-credit elective courses at the 300, 400, or 500 level in engineering and two approved three-credit courses in ocean engineering.



## COLLEGE OF THE ENVIRONMENT AND LIFE SCIENCES

Jeffrey R. Seemann, *Dean*  
Dennis Nixon, *Associate Dean*  
Cathy Wessells, *Associate Dean*

The College of the Environment and Life Sciences (CELS) offers undergraduate majors leading to three degrees: the Bachelor of Science (B.S.), the Bachelor of Arts (B.A.), and the Bachelor of Landscape Architecture (B.L.A.). The following majors are offered within the B.S. degree program: animal science and technology, aquaculture and fishery technology, clinical laboratory science, coastal and marine policy and management, environmental economics and management, environmental plant biology, environmental science and management, geology and geological oceanography, geosciences, microbiology, nutrition and dietetics, resource economics and commerce, urban horticulture and turfgrass management, water and soil science, and wildlife and conservation biology. Students may obtain a B.A. or B.S. in coastal and marine policy.

Options have been developed within certain majors to help students prepare for graduate study, professional training, or specialized careers. Entering freshmen and transfer students with fewer than 24 credits are admitted to University College, and may choose a major in the College of the Environment and Life Sciences at that time. Students may choose an option when they transfer to CELS at a later time.

Undergraduate students from any college may develop a minor from one of the majors offered by the College of the Environment and Life Sciences. Details can be worked out with an appropriate faculty advisor. In addition, most departments have an internship program for combining hands-on professional experience with academic credit.

The Department of Community Planning and Landscape Architecture offers a minor in community planning which is described on page 34.

### Faculty

Many faculty members hold a joint appointment with the Rhode Island Agricultural Experiment Station and the Rhode Island Cooperative Extension. These units represent the formal research and public service functions of the college and are funded with federal and state monies.

*Cell and Molecular Biology:* Professor Sperry, *chairperson*. Professors Bradley, P. Cohen, Goldsmith, Hufnagel, Laux, D. Nelson, Seemann, and Tremblay; Associate Professors Chandlee, Krul, Mottinger, and J.H. Norris; Professors Emeriti Cabelli, Carpenter, Hartman, Traxler, and Wood; Adjunct Professors Mehta, and Scorpio; Adjunct Assistant Professors Bauer, Deshmukh, Fornari, Kaplan, and Kausch.

*Clinical Laboratory Science:* Adjunct Associate Professor Paquette, *director*. Adjunct Clinical Professors Allegra and Kenney; Adjunct Clinical Associate Professors Kessimian and Schwartz; Adjunct Clinical Assistant Professors Campbell, Gmuer, Goddu, Heelan, Ingersoll, Lewandowski, and Mello.

*Community Planning:* Professor Atash, *chairperson and program director*. Professors Atash and Feld; Associate Professors Feldman, H. Foster, and Jensen; Adjunct Professor Thomas; Adjunct Associate Professors Abedon, Flynn, Kumekawa, Ruggerio, R.B. Shaw, and Westcott; Adjunct Assistant Professors Motte, Parella, Schatz, and Winsor.

*Environmental and Natural Resource Economics:* Professor Wessells, *chairperson*. Professors J. Anderson, Gates, Grigalunas, Opaluch, Sutinen, Swallow, and T. Tyrrell; Associate Professor Wichelns; Assistant Professor C. Anderson; Assistant Research Professors Johnston and Mazzota.

*Fisheries, Animal and Veterinary Science:* Professor Rice, *chairperson*. Professors Bengtson, Bradley, DeAlteris, Mallilo, Nippo, Rhodes, and Wing; Assistant Professors Gomez-Chiarri and Whitworth; Adjunct Associate Professors Bodammer, Klein-McPhee, Kocik, Musick, Pechenik, and Smolowitz; Adjunct Assistant Profes-

sors Balmforth, Berlinsky, Blott, Ganz, Kaiser, Rheault, and Weatherbee; Adjunct Clinical Professor Serra; Professors Emeriti Chang, McCreight, and Wolke.

*Nutrition and Food Sciences:* Professor Caldwell, *chairperson*. Professors Greene and C. Lee; Associate Professors English, Gerber, and Patnoid; Assistant Professors Fey-Yensan and Melanson; Adjunct Associate Professor Sebelia; Adjunct Assistant Professors Gianquitti and Pivarnik; Professors Emeriti Constantinides, Handley, Leclarer, and Rand.

*Geosciences:* Professor D. Fastovsky, *chairperson*. Professors J. Boothroyd, Cain, Hermes, and Murray; Associate Professors Frohlich and Veeger; Assistant Professor Boving; Adjunct Associate Professors Burks, Civco, and Fischer.

*Geology and Geological Oceanography:* Professor Hermes, *coordinator*. The faculty consists of the members of the Department of Geosciences and the marine geology and geophysics faculty of the Graduate School of Oceanography.

*Landscape Architecture:* Professor Simeoni, *director*. Professor Hanson, Associate Professor Green; Adjunct Assistant Professors Bourbonnais, Sheridan, and Weygand.

*Marine Affairs:* Professor Juda, *chairperson*. Professors Burroughs, Marti, and D. Nixon; Associate Professor Gordon; Assistant Professors Macinko and Morin; Professors Emeriti Alexander, Knauss, and West; Associate Professor Emeritus Krausse.

*Natural Resources Science:* Professor Husband, *chairperson*. Professors Amador, August, Gold, Golet, and Wright; Associate Professors Paton and Yegiao Wang; Assistant Professors Brosofske, McWilliams, and Stolt; Adjunct Professor Perez; Adjunct Associate Professor Groffman; Adjunct Assistant Professors Compton, Dabek, Lashomb, and Yong Wang; Adjunct Research Professor P. Buckley; Adjunct Associate Research Professors F. Buckley and Gorres; Adjunct Assistant Research Professors Dabek and Tefft; Adjunct Assistant Research Hydrologist Kellogg; Adjunct

Research Scientist Hutchinson; Professor Emeritus Brown.

*Plant Sciences:* Professor Casagrande, *chairperson*. Professors Alm, N. Jackson, LeBrun, Logan, Mather, and Sullivan; Associate Professors Chandlee, Englander, Maynard, and Ruemmele; Adjunct Professor Taylorson; Professor in Residence Ginsberg; Adjunct Assistant Professors Dellaporta, Gettman, and Gordon; Professors Emeriti Hull and Mueller; Associate Professor Emeritus Krul.

## Curriculum Requirements

**Bachelor of Arts.** Students who pursue the B.A. in coastal and marine policy must fulfill the Basic Liberal Studies requirements of the College of Arts and Sciences (see page 47). Also see the listing under coastal and marine policy in this section.

**Bachelor of Science.** Most of the college's B.S. programs require a minimum of 130 credits for graduation, except when specified otherwise under the program description. Required courses come from three categories: general education requirements (36 credits); program requirements (77–85 credits); and free electives (9–12 credits).

The following outline gives the basic general education requirements for all students in the B.S. curriculum. Individual programs may require that specific courses be selected.

*English Communication* (6 credits): three credits in written communication from courses in Group Cw, and three credits in oral communication from communication studies.

*Mathematics* (3 credits)

*Natural Sciences* (6 credits)

*Social Sciences* (6 credits)

In addition, 15 credits must be chosen from:

*Letters* (3–6 credits)

*Fine Arts and Literature* (3–6 credits)

*Foreign Language and Culture* (3–6 credits)

Total: 36 credits.

## Bachelor of Landscape Architecture.

For information on the curriculum requirements for URI's B.L.A. degree, see page 95.

## Animal Science and Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science, is designed for students interested in applied animal science careers. Options are available to students interested in veterinary medicine, animal sciences, and laboratory animal science. Those students who intend to use their study in animal science as credentials for secondary-school teaching should also enroll in this major.

The major requires a minimum of seven credits in introductory animal science and genetics, three in biology, eight in inorganic chemistry, and three in mathematics. Also required are nine to 12 credits in basic science, 24 credits of concentration courses, and 26–29 credits of supporting electives approved for the major.

**Animal Science Option.** This option includes animal nutrition, physiology, behavior, and disease. Students will normally emphasize one or more of these areas. A strong preparatory background in the basic sciences is needed. Students in this option seek employment in technical areas and/or continue their studies in specialized graduate programs.

In addition to the requirements of the major, students choosing this option must complete the following basic science requirements: four to eight credits in organic chemistry, three in introductory calculus, and four in microbiology. A course in animal anatomy and physiology is required in the concentration. The remaining credit requirements will be selected from the concentration courses and supporting electives approved for this option.

**Laboratory Animal Option.** Research techniques and procedures for animal care are emphasized along with a strong background in the sciences. Students with this training and animal experience would be employed in research and teaching facilities as animal technicians, animal tech-

nologists, supervisors of animal technicians, and assistant research project leaders.

In addition to the requirements of the major, students must complete the following basic science requirements: four to eight credits in organic chemistry, three in introductory calculus, four in microbiology, and three in statistical methods. Six credits in animal management, three credits in animal anatomy and physiology, and three credits of general nutrition are required in the concentration. The remaining credits will be selected from the concentration courses and supporting electives approved for this option.

**Preveterinary Option.** This option requires a demonstrated capability in the basic sciences and prepares students for admission to veterinary schools offering the D.V.M. degree. Because admission requirements among schools are not totally uniform and are subject to change, students should determine specific requirements of the schools in which they are interested. Those who are not accepted for veterinary training will be well prepared to pursue graduate programs in animal physiology and health.

In addition to the requirements of the major, students must complete the following basic science requirements: eight-credit, two-semester sequence in organic chemistry, three credits in biochemistry, four in microbiology, eight in general physics, three in introductory calculus, and three in intermediate calculus or statistical methods in research. Three credits in animal anatomy and physiology are required in the concentration. The remaining credits will be selected from the concentration courses and supporting electives approved for this option.

## Aquaculture and Fishery Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science, prepares students for professional or technical careers in aquaculture or fisheries-

oriented occupations. It is sufficiently broad to allow for specialization in either fisheries or aquaculture science and technology. Students who demonstrate superior ability in the basic sciences and wish to continue their professional training can select a course curriculum that will both prepare them for graduate school and provide a broad overview in fisheries and aquaculture science and technology.

The major requires a minimum of nine credits in introductory professional courses including natural resource conservation, fisheries or aquaculture, and resource economics; six to eight credits in animal and plant biology; four credits in general chemistry; four additional credits in general or organic chemistry; and nine to twelve additional credits in basic science selected from an approved course list in the departments of Biological Sciences, Chemistry, Computer Science and Statistics, Mathematics, and Physics. In addition, the major requires 24 credits in concentration courses at the 300 level or above, and 18 credits of the concentration courses must be selected from courses offered by the departments of Biological Sciences (zoology); Fisheries, Animal and Veterinary Science; Nutrition and Food Sciences; Marine Affairs; Environmental and Natural Resource Economics; and by the Graduate School of Oceanography. Finally, the program requires 30–36 credits of supporting electives selected from an approved list of courses in the departments of Biological Sciences (botany and zoology); Fisheries, Animal and Veterinary Science; Marine Affairs; Environmental and Natural Resource Economics; Natural Resources Science; and the Graduate School of Oceanography.

## Clinical Laboratory Science

This major, offered by the Department of Cell and Molecular Biology, is concerned with the diagnosis, treatment, and prevention of disease using analytical methods in the clinical laboratory. The department also offers the Master of Science (M.S.) degree.

During the first three years, emphasis is on general education requirements and on the basic courses in biology, chemistry, mathematics, and physics needed for background in the applied health sciences. The courses of the senior year are taught off campus by the staff members of affiliated hospital schools of clinical laboratory science. These schools are accredited by the National Accreditation Agency for Clinical Laboratory Sciences. The senior year is an 11-month program of study and starts in late July, soon after the completion of the third year of the curriculum. It is taken at one of the following locations, which are about 30 miles from the Kingston campus: Rhode Island and Miriam hospitals in Providence, Our Lady of Fatima Hospital in North Providence, and the Rhode Island Blood Center in Providence. The clinical program includes lecture and laboratory instruction in clinical chemistry, clinical microbiology, hematology, immunology, immunohematology, and molecular pathology, and prepares the student for the national certification examinations and state licensure.

The curriculum is designed to enhance student's professional opportunities in the medical laboratory, biotechnology, and pharmaceutical industries, as well as to prepare the student for graduate or professional school.

Applicants to this curriculum should have completed 60 credits by July of the sophomore year and should have taken most of the courses listed below during the first two years. Students are selected by the University Committee on Clinical Laboratory Science and by program officials of the hospital schools. Since the number of students admitted to this professional curriculum is limited, interested students should consult early in their college career with the coordinator so that they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits the student who is not accepted to fulfill requirements for the Bachelor of Science degree in another concentration such as microbiology or certain related health sciences.

Students with a degree in health or a science discipline may also apply to the clinical internship as a fifth year of study.

A total of 130 credits is required for graduation.

### *Freshman Year*

#### *First semester: 14–15 credits*

CHM 101, 102 or 103, 105 (4); BIO 112 or 113 (4); MTH 111 or 131 (3) or 141 (4); and one general education requirement (3).

#### *Second semester: 16 credits*

CHM 112, 114 (4); BIO 112 or 113 (4); CSC 101 or 201 (4); MTC 102 (1); and one general education requirement (3).

### *Sophomore Year*

#### *First semester: 17 credits*

CHM 227 (3); PHY 111, 185 (4); MIC 211 or 201 (4); and general education requirements (6).

#### *Second semester: 17 credits*

BIO 242 (3); CHM 226, 228 (5); general education requirements (6); and free elective (3).

### *Junior Year*

#### *First semester: 18 credits*

MIC 333 (3); MTC 483 (3); EDC 102 or 312 (3); and general education requirements (9).

#### *Second semester: 15 credits*

MIC 432 (3); BCH 311 (3); STA 307 or 308 (3); MGT 300 or 301 (3); and electives (3).

### *Senior Year*

#### *First semester: 17 credits*

MTC 405 (2), 407 (2), 409 (4), 411 (4), 413 (2), and 415 (3).

#### *Second semester: 15 credits*

MTC 406 (2), 410 (4), 412 (4), 414 (2), and 416 (3).

## Coastal and Marine Policy

These interdisciplinary majors, offered by the Department of Marine Affairs, focus on coastal and ocean areas and examine environments, resources, and uses from a variety of perspectives. Topics include coastal and fisheries management, ports and maritime transportation, ocean policy and ocean law.

A coastal and marine policy major establishes a background for careers in the public or private sectors in a wide variety of marine-related fields. Typical areas of employment include positions in government concerned with coastal zone, environmental, or fishery management, and marine transportation. In the private sectors, students have secured positions in environmental consulting firms, marine insurance, public interest nongovernmental organizations, marinas, ports, and companies involved in shipping. The major serves well as an educational background for continued study in law, especially environmental, fishery, coastal zone, admiralty, and ocean law. Students have also entered graduate and professional programs in environmental management, public administration, community planning, marine affairs, and related fields.

URI's Department of Marine Affairs offers the following degrees: B.A., B.S., M.A., M.M.A. (Master of Marine Affairs), and Ph.D.

Students in the Department of Marine Affairs must maintain a 2.8 G.P.A. and take at least one MAF course per year to retain their New England regional tuition status. Failure to meet these objectives will result in suspension of the reduced tuition privilege. Reinstatement may occur if the student meets these requirements for one year after the time of the suspension.

**Bachelor of Arts in Coastal and Marine Policy Studies.** Students who obtain the B.A. in coastal and marine policy studies must fulfill the Basic Liberal Studies requirements of the College of Arts and Sciences (page 47).

Students selecting this field are required to complete at least 30 credits (maximum 45) in coastal and marine policy studies as follows.

All of the following courses (12 credits): MAF 100, 120, 220, and 410 [**capstone**]. Five of the following courses (15 credits): MAF 312, 415, 320, 330, 413, 434, 461, 465, 471, 472, 475, 484, and 499. One additional MAF course (three credits) must be taken to complete the required 30 credits in the degree.

In addition, students must also take STA 308 and OCG 123 or 401 (if OCG 123 is taken, it may also be used toward fulfilling the Basic Liberal Studies Natural Sciences requirement).

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

**Bachelor of Science in Coastal and Marine Policy and Management.** Students selecting this field must complete at least 30 hours in coastal and marine policy and management with the following required MAF courses: MAF 100, 120, 220, 410 [**capstone**], 482; and five of the following courses: MAF 312, 320, 330, 413, 415, 434, 461, 465, 471, 472, 475, 484, and 499.

In addition to the above requirements, students must take BIO 101; OCG 123 or 401; MTH 111 or 131; and WRT 333 (3).

Students must also select a total of six courses from the following, of which three must be at the 300 level or above: ASP 281, 381, 483; BIO 141, 262, 355, 418, 455/457; CHM 103, 112, 124, 226, 227; CSC 205, 212, 301, 320, 331, 406, 412, 436; FST 315, 321, 415; GEO 100, 103, 210, 240, 277, 370, 450, 483; NRS 406, 410, 423, 424, 461; OCE 101, 215, 307, 310, 311, 416; PHY 111/185, 112/186, 130, 213/285, 214/286, 306; REN 105, 341, 410, 432, 435, 440, 456, 460; STA 412, 413, 415, 416.

A total of 126 credits is required for graduation.

## Environmental Economics and Management

This major prepares students for professional careers in the public and private sector which address environmental and natural resource management, business, or public policy. This interdisciplinary major is offered jointly by the Department of Environmental and Natural Resource Economics and the Department of Natural Resources Science. Students develop a foundation in both natural and social sciences to understand the interactions between human society and our natural or environmental resources. Environmental economics and management majors seek careers which address the interface between the economic system and the ecological or environmental systems. For example, economic incentives and values can drive individual decisions to use forest, land, water, or air resources, which can in turn cause ecosystem management problems. Public officials, nonprofit organizations, and private businesses need professionals to integrate the ecological and natural science with the economic science aspects of their organizations. Such professionals play an important role in coordinating an interdisciplinary team to address such complex problems. Graduates gain an understanding of both natural sciences and the economy.

The degree requires a minimum of 120 credit hours, including a minimum of 24 credit hours in the concentration credits for this interdisciplinary major. The program is designed as a blend of the existing majors of environmental science and management and resource economics and commerce. In addition to satisfying the general education requirements, students need nine credits in introductory professional courses, including natural resource conservation, introductory resource economics, and introductory soils. As part of the basic science requirements, majors must complete eight credits in biological sciences (four in general botany, four in general zoology); three credits in introductory ecology; four credits in introductory

physics; four credits in physical geology; four credits each in organic and inorganic chemistry, three credits in introductory calculus; and three credits in introductory statistics. Within the 24-credit concentration, students are required to take two courses in forestry and wildlife and two courses in water and soil for a minimum of 12 credits in these natural sciences. A minimum of 12 concentration credits are required in environmental and resource economics (listed under Resource Economics, REN), including economics for environmental resource management and policy and economics of land and water resources, as well as two other courses selected according to the student's particular interests. The major also requires a minimum of nine credits in communication skills beyond the general education requirements. Finally, students may choose a minimum of 12 credits in supporting electives and six credits in free electives.

## Environmental Plant Biology

Environmental plant biology is a joint major offered by the College of the Environment and Life Sciences and the College of Arts and Sciences. The major involves the study of plants from the molecular basis (or underlying gene action) to complex community dynamics. The role of plants throughout the world and their impact on the environment are emphasized. Genetics and molecular biology are studied as a means to improve plants for human use and environmental enhancement. Both harmful and beneficial associations among and between plants and other organisms are featured. A fundamental goal of the study of plants is to achieve stability in landscapes managed for environmental or agricultural purposes. Students with this major can pursue careers in plant biotechnology, plant production and culture, landscape management, and plant protection.

The major requires 130 credits: 36 general education requirement credits, 82–84 program requirement credits, and 9–12 free elective credits. With significant help

from an advisor, students formulate a program of study designed to meet their own educational and professional goals.

## Environmental Science and Management

The major in environmental science and management, offered by the Department of Natural Resources Science, prepares undergraduate students for professional careers in the public and private sectors of natural resources management. Flexible course requirements allow students to develop individual areas of concentration and prepare for a variety of positions in environmental management after graduation. This major is also suitable for students who wish to become certified as teachers of environmental science and natural resources at the secondary level. In addition, the program provides a solid background for graduate study in several more specialized environmental science disciplines. Environmental science and management majors may meet the educational requirements for state and federal employment as biologists, natural resource specialists, environmental scientists, and other classifications.

The major requires 13 credits of introductory professional courses, which include natural resource conservation, seminar in natural resources, resource economics, introductory soil science, environmental data analysis, and conservation of populations and ecosystems. As part of the basic science requirements, environmental science and management majors must complete six to eight credits in biological sciences (three to four in general botany, three to four in general zoology); three credits in introductory ecology; four credits in introductory physics; four credits in physical geology; three to four credits in introductory biochemistry, introductory microbiology, or geomorphology; eight credits in introductory chemistry; four credits in organic chemistry, three credits in introductory calculus; and three credits in introductory statistics. Required concentration courses (26 credits) must be taken

at the 300 level or above; at least 18 credits must be selected from courses offered by the Department of Natural Resources Science. (Please note that internships, seminars, and special projects may not be counted toward the concentration.)

In addition, one course must be selected from each of the following groups: biological or ecological science; water and soil science; methods in environmental science; natural resources management; and economics, planning, policy, and law. These and the remaining concentration credits should be selected from courses offered by the Department of Natural Resources Science or from an approved list of courses. Supporting electives (20–23 credits) must be selected from an approved list of courses, mostly at the 300 and 400 levels. Up to 24 credits of experiential learning courses may be taken toward satisfying concentration (letter grade courses only) and supporting elective requirements. NRS 402, 423, 424, 450, and 522 are the **capstone** experiences in this major.

## Geology and Geological Oceanography

This major, offered by the Department of Geosciences and the Graduate School of Oceanography, includes a comprehensive background in geology and a solid introduction to geological oceanography. The curriculum includes the full set of chemistry, physics, biology, and mathematics courses required for a B.S. in geosciences. Students in the program will be advised jointly by geosciences and oceanography faculty members.

A senior research project will be taken in the Graduate School of Oceanography as OCG 493 or 494 [**capstones**], under the direction of a GSO faculty member. Three core courses in oceanography—OCG 401 or 451, 540, and one additional OCG course at the 400 level or above selected by the student in conjunction with the advisor—will provide the student with a good overview of his or her intended field, and also relieve the student of two re-

quired courses if he or she continues on to study oceanography at the graduate level at the University of Rhode Island. In addition to this, the student may find opportunities for summer employment or participation in oceanographic research cruises after his or her junior year.

Students completing this program of study will be well prepared to pursue careers in either conventional geology or geological oceanography. Technical positions in private or government oceanographic laboratories are available for geological oceanographers with bachelor's degrees. Students who pursue graduate studies can expect to find a high demand for geological oceanographers with advanced degrees. Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared with those entering from most other undergraduate institutions.

The following core courses are required: GEO 103 (4), 210 (4), 240 (4), 320 (4), 321 (4), 370 (4), 421 (3), 450 (4), 465 (3), 480 (4), 488 (4); OCG 401 or OCG 451, 540 (3); OCG 493 or 494 [capstones] (3); and one additional OCG course at the 400 level or above. Students must also complete the following supporting course work: BIO 104A or 112; BIO 104B or 113 (4); MTH 131 (3) or 141 (4) and 132 (3) or 142 (4); CSC 201 (4) or STA 308 (3); BIO 112 (4); BIO 113 (4); CHM 101, 102 (4) and 112, 114 (4); PHY 111, 185 (4) or 213, 285 (4); PHY 112, 186 (4) or 214, 286 (4).

A total of 126 credits is required for graduation.

## Geosciences

The major in geosciences, offered by the Department of Geosciences, is designed as a foundation for careers in the earth sciences. The federal government identifies GEO 210, 240, 320, 321, 370, 450, and supporting sciences as a minimum background for geologists. Students in the curriculum may elect one of the following options: general geology, environmental geology, geophysics, hydro-

geology, petrology, or sedimentary geology. These options offer preparation for further work in areas such as environmental geology, mineral and energy resources, hydrology, sedimentology, coastal geology, paleontology, paleoecology, igneous and metamorphic petrology, geochemistry, structural geology, and tectonics.

Students interested in teaching earth science should contact the University's Department of Geosciences for details about a cooperative program with the Department of Education.

All B.S. majors are required to complete the following geosciences courses: 103 (4), 203 (3), 320 (4), 321 (4), 370 (4), 450 (4), 488 [capstone] (4), and an approved summer field camp (GEO 480 [capstone]) for a minimum of four credits. The field camp is normally undertaken following the junior year. Students must also complete the following supporting course work: MTH 131 (3) or 141 (4); MTH 132 (3) or 142 (4); BIO 104A or 112 (4); BIO 104B or 113; CHM 101, 102 (4), and 112, 114 (4); CSC 201 (4) or STA 308 (3); PHY 111, 185 (4) or 213, 285 (4); and PHY 112, 186 (4) or 214, 286 (4).

*Note:* Students electing the petrology, hydrogeology, or geophysics options may, with the chairperson's approval, take GEO 240 or an additional semester of mathematics, chemistry, or physics in lieu of a second semester of biological sciences. Completion of these courses fulfills the Natural Sciences and Mathematics requirements of the general education program.

GEO 499 is also a **capstone** experience for this major.

A total of 126 credits is required for graduation.

**General Geology Option.** Emphasizes a broad approach to earth science and incorporates introductory courses in each of the major earth science disciplines. This option includes all of the geosciences and supporting science courses recognized by the federal government as a minimum background for geologists. Students selecting this option are required to complete the following geosciences courses: GEO 210 (4), 240 (4), 421 (3), and 465 (3).

**Environmental Geology Option.** Emphasizes the study of geology as it pertains to the environment, including the recognition and reduction of effects of geologic hazards (coastal erosion, volcanic eruptions, earthquakes). Students selecting this option are required to complete the following geosciences courses: GEO 100 (3), 210 (4), and 301 (3). Students must also take two of the following: GEO 277 (3), 468 (4), 483 (4), 485 (3), 515 (3), 550 (3), 577 (3); NRS 410 (3), 423 (4), 424 (4), 461 (4); CPL 434 (3); and GEO 530.

**Geophysics Option.** Emphasizes applied geophysics, particularly the use of near-surface geophysical methods such as geoelectrics, gravity, and seismic refraction. Students selecting this option are required to complete the following geosciences courses: GEO 465 (3) and 485 (3). Students must also take two of the following: GEO 421 (3), 468 (4), 483 (4), 565 (3), and 570 (3).

**Hydrogeology Option.** Emphasizes the study of groundwater and its interaction with earth materials. This option includes all of the hydrology and supporting science courses recognized by the federal government as a minimum background for hydrologists. Students selecting this option are required to complete the following geosciences courses: GEO 210 (4), 468 (4), and 483 (4). Students must also take two of the following: GEO 421 (3), 485 (3), 515 (3), 550 (3), 568 (3), 583 (3); NRS 412 (3), 461 (4) or CVE 475 (3); NRS 510 (3); and CPL 434 (3).

**Petrology Option.** Emphasizes the study of igneous and metamorphic processes through geochemistry, petrography, and structural analysis, leading to interpretations of rock petrogenesis and earth history. Students selecting this option are required to complete the following geosciences courses: GEO 421 (3), 530 or 531 (3). Students must also take two of the following: GEO 465 (3), 468 (4), 530 or 531 (3), 554 (3), 565 (3), 570 (3), 580 (3), and CHM 431 (3).

**Sedimentary Geology Option.** Emphasizes the study and interpretation of depositional environments, both in the present and in the geologic record, including the study of sedimentary processes, paleontology, the reconstruction of paleoenvironments, and stratigraphy. Students selecting this option are required to complete the following geosciences courses: GEO 210 (4), 240 (4), and 468 (4). Students must also take two of the following: GEO 277 (3), 421 (3), 465 (3), 515 (3), 550 (3), 554 (3); NRS 423 (4) and 424 (4).

## Landscape Architecture

Landscape architecture is a curriculum leading to the Bachelor of Landscape Architecture (B.L.A.) degree. Accredited by the American Society of Landscape Architects, the curriculum is designed to prepare undergraduates for professional careers in the public and private sectors of landscape architecture that involve the design, planning, preservation, and restoration of the landscape by applying both art and science to achieve the best use of our land resources.

Landscape architects design and plan parks, recreation areas, new communities and residential developments, urban spaces, pedestrian areas, commercial centers, resort developments, transportation facilities, corporate and institutional centers, industrial parks, and waterfront developments. Their professional skills may also be used to design natural, historic, and coastal landscape preservation projects.

The requirements of this curriculum include preparation in the basic arts and sciences. The major includes 57 credits of program courses; 22–24 credits of supporting requirements; and 13–15 credits of approved supporting electives through which a student may obtain additional preparation in art, community planning, natural resources, or plant sciences. Graduation requirements include a minimum of 130 credits maintaining a quality point average of at least 2.00 and no landscape architecture grades below a grade of C.

URI's landscape architecture program is oversubscribed. Accreditation standards regarding staff and facilities limit the present student acceptance into the major to 20 per year and require a competitive admissions policy. Students will be reviewed twice during the course of their studies: first for admission into the lower-division design sequence and again for acceptance into the upper-division B.L.A. major. A cumulative quality point average requirement is determined each year for both of these reviews. Recently, the cutoff has ranged from 2.40 to 2.60 for those accepted to the lower and upper divisions.

Admission into the lower-division design sequence courses (LAR 243 and 244) requires departmental approval. Approximately 50 percent of the openings are filled by students entering as incoming freshmen and/or transfer students through Undergraduate Admissions (subject to maintaining a minimum 2.00 quality point average with no grades in LAR courses below a C). These students begin the design sequence in the fall semester of their second year at URI. The remaining openings are filled by matriculated students through an application accompanied by a transcript of grades. Applications and transcripts are evaluated in February each year for acceptance into the lower-division courses in the coming fall. In order to encourage minority applicants, one available space is set aside each year for a minority applicant who meets the minimal program qualifications.

Acceptance into the upper-division (junior-senior) landscape architecture major is based on submission and review of a portfolio of lower-division work, academic transcript, and a written essay. A maximum of 20 students per year are accepted into the upper-division B.L.A. curriculum. Eligible applicants for the upper division are students enrolled in LAR 244, repeat applicants, and students wishing to transfer directly into the upper division from other landscape architecture programs. Only students who have completed comparable lower-division courses in programs that have been accredited by the

American Society of Landscape Architects will be allowed to compete for these upper-division positions. Such transfer applicants must first be accepted into the University by the Office of Undergraduate Admissions and have their portfolio, transcripts, and essays submitted to the director of the landscape architecture program before February 15 preceding the fall semester in which they wish to enroll. Students will be notified of their acceptance into the upper-division program before preregistration for fall classes.

Interested students should discuss entrance probabilities with the program advisor.

For information on the University's accelerated master's degree in community planning, available to undergraduate landscape architecture students at URI, see page 127. The University also offers a minor in community planning, described on page 34.

## Marine Resource Development

Admission to the B.S. degree program in marine resource development is currently suspended. Contact the dean's office or the Department of Fisheries, Animal and Veterinary Science for more information.

## Microbiology

This major, offered by the Department of Cell and Molecular Biology, meets the guidelines of the American Society for Microbiology. It will prepare the student for working in a wide variety of scientific areas including molecular genetics, biotechnology, and the pharmaceutical industry, as well as many other aspects of the biological sciences. A strong background in chemistry is achieved, giving an excellent preparation for graduate school and the professional schools. An option in biotechnology is also available.

Students who develop a strong interest in the clinical aspect of microbiology can easily move to the URI's Clinical Laboratory Sciences program. This department also

offers a Master of Science degree in cell and molecular biology, and a Ph.D. in biological sciences.

A minimum of 30 credits in microbiology is required, including MIC 333; the **capstone** experiences 413, 414, 415, and 416; and 495, and one course selected from MIC 412, 422, 432, or 576. The student majoring in microbiology may include any course in microbiology; BIO 327, 331, 341, 432, 437, 465, and 534. A student who plans to attend graduate school is advised to take MTH 131 and 132 or 141 and 142, and BCH 435. In addition, the student must take BIO 112, 113, and 352; CHM 101, 102, or 103, 105; 112, 114, 212, 226, 227, and 228; BCH 311; PHY 213, 214, 285, and 286 or 111, 112, 185, and 186; and MTH 131 or 141 and one semester from the following: MTH 111, 132, 142; CSC 201 or STA 308.

Note: CHM 229, 230, which are offered in summer only, may be substituted for CHM 226.

A total of 130 credits is required for graduation.

**Biotechnology Option.** Students in the microbiology major may elect the biotechnology option, which would offer them preparation for further work in research and development, biotechnology operations, quality assurance, and regulatory affairs. This option emphasizes a broad and interdisciplinary overview of the biotechnology industry, and provides students with an academic background in microbiology, biochemistry, cell biology, molecular biology, and molecular genetics to prepare them for careers at several levels of industry.

In addition to the courses specified for the major, the following biochemistry and microbiology courses are required: BIO 437, MIC 190, 211, 333, 341, 413, 415, 499 and six additional credits of MIC or BCH course work. MIC 414, 416 and 495 are not required for students pursuing this option.

The required internship in this option (MIC 499) is conducted with the cooperation of local members of the biotechnology industry and may be pursued on a full-

or part-time basis. Students should be aware that internships may be limited in number and are awarded on a competitive basis, therefore those interested in the biotechnology option should consult with their advisors early in their college career.

## Nutrition and Dietetics

This major prepares undergraduates for careers in nutrition-related fields. Two options, dietetics and nutrition, are available.

The major requires 11 credits in introductory professional courses including NFS 110, 207, 227, 236, and 276; 21–22 credits in sciences (four in general chemistry, four in organic chemistry, seven–eight in biology, four in microbiology, and three in biochemistry), three credits in statistics, and 25–29 credits in the concentration including the following courses: NFS 394, 395, 410, 441, 443, and 458 [**capstone**]. WRT 101 and COM 101 are required and may be used to fulfill general education requirements. There are 19–24 credits of supporting electives and 12 credits of free electives. A total of 123 credits is required for graduation.

**Dietetics Option.** This option is required of all students planning to become registered dietitians. URI's dietetics program is accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association (ADA), 216 W. Jackson Blvd., Chicago, IL 60606, 312-899-5400. This option provides students with the academic background in clinical, community, and administrative dietetics. In addition to the core courses specified for the major, the following courses are required: NFS 337, 375, 376, 444 and MGT 300. SOC 100 and PSY 113 are also required and may be used to fulfill general education requirements. Students are encouraged to use supporting elective and free elective courses to study disciplines related to the field.

After completing their B.S. requirements, students can qualify for the professional title of Registered Dietitian by completing supervised practice requirements and passing a national exam. The super-

vised practice requirement is met by completing an ADA-accredited dietetic internship program available to students on a competitive basis nationwide. Internships may be combined with graduate programs in universities leading to an advanced degree. Students completing academic and supervised practice requirements become eligible to take the national registration examination.

**Nutrition Option.** This option is for students who want to study nutrition but do not plan to become registered dietitians. Using this option, students have the opportunity to design their own programs by combining training in nutrition with other areas which interest them. In addition to the courses specified for the major, students must complete a minimum of 3 credits in NFS 491/2 or NFS 451, and 9 credits selected from advanced-level NFS courses. Students must also select a "minor" field of study. To satisfy this requirement, students can complete any one of the University-approved minors, or complete 18 credits in a curriculum other than NFS. Examples of possible minors are health promotion, exercise science, psychology, international development, journalism, biology and general business. Alternatively, with approval from the department, students may complete 18 credits related to their interests or career goals selected from several disciplines. Students may, for example, select courses to prepare for graduate school or meet basic admission requirements for medical school.

## Resource Economics and Commerce

This major, offered by the Department of Environmental and Natural Resource Economics (with courses listed under Resource Economics), provides students with a broad education focused on resource economics, economics, and natural resources sciences. In the private sector, careers can focus on the production, marketing, and distribution of natural resource commodities such as fisheries and agricultural products, timber, and petroleum, or



on recreation and tourism. The major can also prepare the student for working with the conservation and management of natural resources at the state and national levels, for advanced professional programs in community or urban planning or law, or for graduate study in resource and agricultural economics.

REN 105 and NRS 100 are prerequisites for this major, which requires a total of 125 credits. Ten credits in basic sciences are required, including four in general chemistry and six in general biology. Fifteen credits are required in supporting sciences including three in computer science and six in mathematics, physics, genetics, plant physiology, population biology, introductory ecology, microbiology, general and organic chemistry, or physical geology. The remaining six credits in supporting sciences can be selected from courses in applied biology, oceanography, mathematics, chemistry, computer science, or statistics. Introductory calculus is strongly suggested. Twenty-four credits in concentration courses are required at the 300 level or above, including 15 credits in resource economics and three credits in microeconomic theory.

Thirty-one credits are required in supporting electives, which must include six credits in communication skills. The student normally selects six credits in communication in addition to the general education requirements. The remaining credits in concentration courses and supporting electives should be selected in consultation with a faculty advisor.

Students have considerable flexibility in choosing courses in the College of the Environment and Life Sciences and other colleges at the University. All students are required to take sufficient course work in the physical and biological sciences to gain familiarity with the resource area in which they are interested.

Students interested in water resources, for example, would select appropriate courses from natural resources science and chemistry. Students interested in fisheries marketing and trade should select course work in business, fisheries science and

technology, and nutrition and food sciences. Students intending to pursue graduate studies in resource economics or economics should select course work in economic theory, mathematics, and statistics.

## Urban Horticulture and Turfgrass Management

The major in urban horticulture and turfgrass management, offered by the Department of Plant Sciences, is intended to educate students in the sciences, both natural and social, in preparation for professional careers in the many fields of environmental horticulture. Graduates of this program may pursue careers as landscape contractors, golf course superintendents, directors of park systems and arboreta, proprietors of garden centers and floral shops, plant propagators, nursery personnel, vegetable and fruit growers, managers of lawn service firms, horticultural therapists, and technical representatives for seed, equipment, and chemical companies, to name some of the opportunities available. Others may enter graduate school and pursue careers in research and education in both public and private institutions. This program has as its unifying theme the culture and use of plants that enhance the human environment.

URI's Department of Plant Sciences operates 50 acres of turfgrass, horticulture and plant science research and education farm centers. The C. Richard Skogley Turfgrass Center is the oldest research and teaching program in the U.S. Also included in the department's facilities are five research laboratories, controlled environment facilities, a greenhouse complex, and a biotechnology initiative for hands-on opportunities. The University is currently completing plans for a research and teaching 18-hole championship golf course and teaching center on campus.

Depending on the area of specialization, graduates can meet the standards of several certification organizations. Graduates specializing in turfgrass management qualify for certification as turfgrass manag-

ers or turfgrass specialists with the American Registry of Certified Professionals in Agronomy, Crops, and Soils, Ltd. of the American Society of Agronomy. These same graduates also meet the requirements for registration with the Golf Course Superintendents Association of America.

The major requires 24–25 credits of preprofessional courses, including six in general education; 21–24 credits in concentration courses; 12 credits of free electives; and 39–43 credits in supporting electives selected from approved course lists in the student's area of interest with permission of the advisor. Most supporting electives are at the 300 or 400 level, but certain lower-level courses may be acceptable if approved by an advisor. Included among these electives are business and management courses in the Department of Environmental and Natural Resource Economics, as well as advanced offerings in plant science, botany, and soil science.

## Water and Soil Science

The major in water and soil science, offered by the Department of Natural Resources Science, is designed to train students in the science and management of land and water resources. This major prepares undergraduate students for careers in positions with environmental and natural resource regulatory agencies, environmental consulting firms, and land conservation organizations. Course tracks in soil science and water resources provide in-depth training in specific, career-related disciplines such as environmental soil science, hydrology, watershed science, and soil conservation and land use. With proper course selection, students are eligible for certification from the American Registry of Certified Professional Soil Scientists. The water and soil science major also provides excellent preparation for graduate study.

This major requires 13 credits of professional courses, which include natural resource conservation, seminar in natural resources, resource economics, introductory soil science, environmental data

analysis and conservation of populations and ecosystems. As part of the basic science requirements, water and soil science students must complete six to eight credits in biological sciences (three to four in general botany, three to four in general zoology); three credits in introductory ecology; four credits in introductory physics; four credits in physical geology; three to four credits in introductory biochemistry, introductory microbiology, or geomorphology; eight credits in introductory chemistry; four credits in organic chemistry; three credits in introductory calculus; and three credits in introductory statistics. Required concentration courses (29–33) must include at least 12–13 credits selected from methods of soils and water analysis, a soil morphology practicum, soil-water chemistry, soil conservation and land use, plant nutrition and soil fertility, soil-water relations, microbial ecology of soils and sediments, soil morphology and mapping, and soil genesis and classification; 17–20 credits selected from concepts in GIS, fundamentals of GIS, wetland ecology, wetlands and land use, soil and water conservation technology, hydrology and water management, advanced GIS, water quality sampling and analysis, aquatic entomology, introduction to sedimentation and stratigraphy, general oceanography, and limnology. Supporting electives (13–17 credits) must be selected from approved lists or from remaining concentration electives. Up to 24 credits of experiential learning courses may be taken toward satisfying concentration (letter grade courses only) and supporting elective requirements.

NRS 423, 424, 425, and 522 are the **capstone** experiences in this major.

## Wildlife and Conservation Biology

The major in wildlife and conservation biology, offered through the Department of Natural Resources Science, prepares students for professional careers in the public and private sectors of wildlife biology. In addition, the major provides a solid background for graduate study. Wildlife biologists are professionals concerned with the scientific management of the earth's wildlife species and their habitats. They work in the areas of preservation, conservation, and management of wildlife species. Graduates can become Certified Wildlife Biologists (CWBs) who are recognized by the Wildlife Society, an international professional organization. In addition, wildlife majors meet the educational requirements for state and federal employment in the wildlife profession.

The major requires 13 credits of professional courses, which include natural resource conservation, seminar in natural resources, resource economics, introductory soil science, and conservation of populations and ecosystems. As part of the basic science requirements, wildlife majors must complete six to eight credits in biological sciences (three to four in general botany, three to four in general zoology); three credits in introductory ecology; four credits in introductory physics; four credits in physical geology; four credits in introductory chemistry; four credits in organic chemistry; three credits in introductory calculus; and three credits in introductory statistics. Required concentration courses (22–23 credits) include three credits in the

principles of wildlife management; three credits in wildlife field techniques; four credits in field botany and taxonomy; three credits in wetland wildlife or non-game and endangered species management; and nine to ten credits from an approved list of concentration courses including field ornithology, biology of mammals, vertebrate biology, animal behavior, introduction to forest science, wetland wildlife management, wetland ecology, and wildlife biometrics. Supporting electives (31–32 credits) must be selected from approved lists and include the following upper-division course work: three credits in botany; six credits in zoology; six credits in resource policy or administration, environmental law, or land use planning; and six credits in communications. An additional 10–11 credits of supporting electives must be selected from concentration electives, or from other 300- or 400-level natural resources science courses. Up to 24 credits of experiential learning courses may be taken toward satisfying concentration (letter grade courses only) and supporting elective requirements.

NRS 402, 423, 424, 425, and 538 are the **capstone** experiences in this major.

## COLLEGE OF HUMAN SCIENCE AND SERVICES

William Lynn McKinney, *Dean*  
Diane Horm-Wingerd, *Interim Associate Dean*

John Humphrey, *Assistant Dean*

The College of Human Science and Services is a people-oriented college designed to focus on the human and material resources needed to help individuals and groups solve human problems encountered in contemporary society. Our programs prepare students for a variety of professions in teacher education, health-related fields, and fields that have evolved from URI's historic land-grant mission in home economics. These programs include both formal and informal experiences with people in a wide variety of public service settings which enable students to develop the competencies needed in the field of human services. The teacher education programs offered through the college are outlined in the following departmental descriptions. For more information on teacher education programs, see page 38.

Degrees offered include a Bachelor of Science degree with majors in communicative disorders; dental hygiene; human development and family studies; human science and services; physical education; secondary education; textile marketing; and textiles, fashion merchandising, and design; and Bachelor of Arts degrees in elementary or secondary education.

The college sponsors a number of organizations and activities that provide special opportunities for students, including two child development centers, family therapy clinic, historic textile and costume collection, computer laboratory, physical therapy clinic, and a speech and hearing clinic.

**Minors: Interdisciplinary Nondegree Programs.** Students can declare a minor, which will appear on their transcripts as a category separate from their major. Credits may be drawn from any cohesive combina-

tion of courses. A minor may be defined as: 1) the completion of 18 or more credits in any of the minors that have been proposed by one or more departments and approved by the Curriculum Affairs Committee, Faculty Senate, and president; 2) the completion of 18 or more credits within a curriculum other than the student's major; or 3) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area and the dean of the college. At least 12 of the 18 credits must be at the 200 level or above. Elective courses and courses in general education may be used for the minor. No course may be used to apply to both the major and a minor field of study. A minimum average of 2.00 must be earned in the courses in the minor. Courses in the minor may not be taken under the pass-fail option. It is the responsibility of the student to declare and obtain approval for a minor no later than the end of the add period at the start of the senior year. The college participates in the following minors: financial counseling and planning, gerontology, hunger studies, leadership studies, and special populations (see pages 35–37).

**Minor in Family Financial Counseling and Planning.** This minor provides an option for students who are not majoring in human development and family studies, but who are interested in the area of family financial counseling and planning. The HDF department currently offers a Family Financial Counseling and Planning Certification (FFCP) program as an option for HDF majors, and several of the offered courses may be appealing to students in other majors, for recognition or additional job opportunities. Students in this minor take courses in financial issues over the life span, personal finance and its applications, and retirement planning, with options to pursue their interests in consumer issues and financial counseling. The minor requires six courses total: HDF 205, 418, 424, and 426; HDF 210, 225, or 428; and HDF 450, 451, or 477.

## Faculty

*Communicative Disorders:* Professor J. Singer, *chairperson*. Associate Professor Preece; Assistant Professors Karow, M. Kim, and Kovarsky; Clinical Assistant Professor Connors; Adjunct Assistant Professor R. Singer.

*Dental Hygiene:* Assistant Professor S. Saunders, *director*.

*School of Education:* Professor R. Felner, *director*. Professors Boulmetis, Brittingham, Byrd, Croasdale, Eichinger, Favazza, Heifetz, McKinney, Purnell, Trostle, G. Willis, and Young; Associate Professor Hicks; Assistant Professors Adamy, Deeney, Guglielmi, Roy, Seitsinger, and Shim; Adjunct Assistant Professor Tierney; Research Assistant Professors Brand and Gu.

*Human Development and Family Studies:* Professor Newman, *chairperson*. Professors J. Adams, J. Gray Anderson, Clark, Cohen, Horm-Wingerd, Maynard, Schaffran, and Xiao; Associate Professors Kalymun, Knott, and Richmond; Assistant Professors Branch, McCurdy, Prouty, and Saunders; Adjunct Professors Caruso and P. Newman; Adjunct Instructors Blumen, Kerbel, Leinhaas, J. Prochaska, and Warford; Professor Emeritus Rae.

*Physical Education and Exercise Science:* Associate Professor Blanpied and Professor Manfredi, *co-chairpersons*. Professor Rowinski; Associate Professors Agostinucci, Ballinger, Lamont, O'Donnell, Riebe, and Roush; Assistant Professor Blissmer; Clinical Assistant Professors Hulme, Katzanek, McLinden, and Niehaus.

*Textiles, Fashion Merchandising, and Design:* Professor Bide, *chairperson*. Professor Welters; Associate Professors Harps-Logan and Ordenez; Assistant Professors Hannel and Lillethun; Adjunct Professor Emery.

*Interdisciplinary Programs:* Gerontology—Professor Clark, *director*; Human Science and Services—Dean McKinney, *program head*; Leadership Studies—Associate Professor Richmond, *acting program head*; Special Populations—Associate Professor O'Donnell, *acting program head*.

## Curriculum Requirements

**General Education Requirements.** All students pursuing a bachelor's degree in the college are required to develop a 39-credit program in general education within the framework listed below. For a complete description of these requirements, see pages 32–33. Individual programs may require specific courses.

*English Communication* (6 credits): a minimum of three credits in written communication from courses in Group Cw; a minimum of three credits in oral communication from COM 101, 103.

*Fine Arts and Literature* (6 credits)

*Foreign Language and Culture* (6 credits)

*Letters* (6 credits)

*Mathematics* (3 credits)

*Natural Sciences* (6 credits)

*Social Sciences* (6 credits): a minimum of three credits from anthropology, psychology, or sociology courses approved for general education.

Students in the elementary education program must follow the basic liberal studies requirements of the College of Arts and Sciences.

**Field Work.** Many of the college's academic programs require a supervised field work experience as part of the degree requirements. This experience is designed to provide students with the opportunity to apply classroom knowledge in a career-related setting. Placements are made in a wide variety of agencies such as public schools, health care facilities, child care centers, and other human service settings. Satisfactory completion of a required field experience depends on achievement of basic competencies established by the academic department in cooperation with the agency. The University supervisor is responsible for determining whether or not the student has attained the required competencies and, in some cases, may extend the time required for the experience until the student's performance is satisfactory. If in the opinion of the University supervisor the performance of the student is unsatisfactory, and particularly if client/patient safety is at risk, the student may be removed from the field experience prior to the end of the semester or term.

factory, and particularly if client/patient safety is at risk, the student may be removed from the field experience prior to the end of the semester or term.

**Course Load.** Approval of the advisor and the dean is needed for a schedule of more than 19 credits per semester.

**Repeating Courses for Credit.** Unless otherwise stated in the course description, a course cannot be repeated for credit. Credit can be counted only once toward the total credits required for graduation. Repeating courses in which a grade of C or better was earned requires approval of the student's academic dean; students may need to take such courses on a pass-fail basis.

**Transfer Students.** Transfer students should be advised that admission to some programs in the college requires meeting certain prerequisites or separate admission criteria. Teacher education programs in the School of Education, Department of Human Development and Family Studies, and the Department of Physical Education and Exercise Science have specific admission criteria and generally require that a matriculated student complete at least one semester of work at URI before applying for admission. Transfer students may be admitted to the University, but are not admitted directly into these programs.

The Plan for Early Contingent Admission to the M.S. Program in Physical Therapy requires careful and timely course planning typically beginning with the freshman year at URI. It is unlikely that transfer students would have the appropriate sequence of courses, including the prerequisites, that would allow them to take advantage of this option.

Students interested in any of the above programs should refer to the specific program descriptions on the following pages and consult the department for additional information.

**Graduation.** It is the responsibility of each student to file an Intent to Graduate form and curriculum work sheet approved by their advisor in the Dean's Office. The

deadline is September 15 for May graduation, April 5 for August graduation, and May 5 for December graduation.

## Communicative Disorders

This curriculum leads to a Bachelor of Science (B.S.) degree. In addition to general education requirements and appropriate free electives, a major of 43 semester hours in communicative disorders includes 34 semester hours of required courses and nine semester hours of professional electives.

The required courses are CMD 260, 261, 372, 373, 374, 375, 376, 377, 454, 465, and 493. The remaining nine credits (three courses) must be selected from the four areas listed below with a limit of one course in a given area:

**Area A** (0–3 credits). *Normal Human Development and Adjustment*: HDF 200, 201, 450; PSY 232, 235.

**Area B** (0–3 credits). *Special Populations*: CMD 475 (2 credits); HDF 314; PSY 254, 442.

**Area C** (0–3 credits). *Supportive Disciplines*: COM 220; EDC 312, 424; HSS 320; LIN 201; PSY 300, 384, 386; STA 220.

**Area D** (0–3 credits). *Honors Work, Individual Research, or Special Problems within the department*: CMD 391, 392, 491, 492.

With careful early planning, students can use free electives to achieve a double major or explore special-interest areas in depth. Students should anticipate the necessity for graduate study in speech-language pathology or audiology. The typical minimum entry requirement for graduate study is a quality point average of 3.00.

A total of 120 credits is required for graduation.

**Accelerated Bachelor's-Master's Degree Program in Speech-Language Pathology or Audiology.** URI sixth-semester students pursuing a B.S. degree in communicative disorders with 25 credits of electives remaining may apply for acceptance into an accelerated master's degree program in

either speech-language pathology or audiology. This accelerated program is not available to non-URI undergraduates or part-time graduate students. Students accepted into this program follow a specified sequence of graduate-level course work and clinical practicum during their senior year, and complete the master's degree with one additional year and one summer of full-time graduate study. A cumulative quality point average of 3.00 overall and 3.20 in the major is required, with satisfactory MAT or GRE scores. Three letters of recommendation (two from URI communicative disorders faculty) are also needed. Students should indicate their intent to apply to the accelerated program in the graduate application materials.

Students in this program are required to take a minimum of 25 credits in specified course work and practicums (16 credits at the 400–500) in the senior year, and 30 credits at the 400–500 level in the fifth year. Requirements for the M.S. degree in speech-language pathology or audiology are outlined in “Graduate Programs” (see page 149 for more information).

## Dental Hygiene

URI offers two programs leading to a B.S. in dental hygiene: the Joint Dental Hygiene Program and the Degree Completion Program. Both programs provide educational experiences that will enhance the hygienist's professional development as well as expand career options in the continuously changing health delivery environment. Graduates are prepared to assume positions of responsibility and leadership in a variety of health care, community, and educational settings. They are also prepared to continue their education at the graduate and/or professional levels.

**Joint Dental Hygiene Program.** This is the entry-level dental hygiene program. Students applying to it will be admitted concurrently to both URI and the Community College of Rhode Island. Admission to this program is competitive and includes the same review process used for any applicant to URI or CCRI.

The Joint Dental Hygiene Program (JDHP) consists of a 1+2+1 course of study in collaboration with CCRI. The first year of study takes place at URI where prerequisite courses for admission to the dental hygiene program at CCRI and general education courses are taken. Upon admission to the program, a place is reserved for each student for the two middle years in the CCRI clinical program. To qualify for the reserved place, the student must meet the requirements of the joint program, as well as the clinical program admission requirements.

If the student fails to meet these requirements, they will not continue to the clinical program. Subsequently, if the student eventually meets the admission requirements, admission to the clinical program will be on a *space-available basis*.

Upon successful completion of the clinical phase of study, the student is awarded an Associate in Science Degree in dental hygiene. The student returns to URI for their senior year to complete requirements for the Bachelor of Science degree. The final year may be done on a full- or part-time basis.

All Joint Dental Hygiene Program students are considered URI students until their bachelor's degree requirements are completed. While at URI (years 1 and 4), tuition, financial aid, student fees, and/or residence hall and dining contracts are the same as for any URI student, resident or commuter.

During the two CCRI clinical years (years 2 and 3), the student is considered an off-campus study student and will be charged an off-campus study fee by URI. If applicable, residence hall and dining contracts will be assessed the same as for any URI student, resident or commuter. CCRI will assess the tuition and fees for the two clinical years on either a resident, non-resident, or regional basis. Financial aid is adjusted each year according to need through the University's Financial Aid Office. More information is available by contacting the URI Dental Hygiene Program and the URI Bursar's Office.

In accordance with URI regulations, at least half (63) of the required 125 credits must be earned at a four-year institution. Program requirements for entry to the CCRI Dental Hygiene Program include successful completion of the following courses: BIO 121; DHY 100; WRT 101; Math (any URI general education math); CHM 103, 105 and CHM 124, 126. Other requirements include CPR certification (American Heart Association healthcare provider card), hepatitis B vaccination, and a cumulative grade point average of 2.00 or better.

## Dental Hygiene Bachelor's Degree Completion Program

This program is designed for students who already have a certificate or associate's degree in dental hygiene and who have successfully completed the National and Regional Dental Hygiene Board Exams. It is a 2+2 plan of study designed for the dental hygiene professional interested in earning a Bachelor of Science (B.S.) degree. It is not an entry-level program. Students may pursue the bachelor's degree on a full- or part-time basis.

Candidates for the B.S. degree must take CHM 124, 126; DHY 350, 462, 464; EDC 312; PSY 232; and an 18-credit specialization or minor selected in consultation with their advisor. Students must also complete the University's general education requirements. In addition, URI requires that a student earn at least half of the credits required for a degree program at a baccalaureate granting institution. Therefore, a maximum of 62 credits from a two-year or community college may be used for degree program credit.

## Education

Curriculums in secondary education lead to the Bachelor of Science or Bachelor of Arts degrees, the curriculum in elementary education to the Bachelor of Arts (B.A.) degree. Students wishing to enroll in the early childhood education program must major in human development and family studies and seek admission to the teacher education component of this pro-

gram, as outlined below. The Master of Arts (M.A.) degree programs in education are described in "Graduate Programs."

The curriculums offer a balanced program of academic preparation and professional training. The required professional courses contribute directly to understanding the teacher's role in society and to the development of teaching skills.

Successful completion of the early childhood education program leads to an initial teaching certificate for the pre-school and primary grades (N-2), while completion of the elementary education program leads to an initial teaching certificate for grades 1-6. The secondary education program leads to an initial teaching certificate for a specific subject area in grades 7-12.

If you are a transfer student, see page 100 for information on transferring into these programs.

**Admission Requirements.** Students interested in undergraduate teacher education programs must apply for admission to the Office of Teacher Education. Students interested in URI's early childhood, elementary, and secondary education programs must submit a portfolio and sit for an interview as part of the admission process. Please visit [www.soe.uri.edu](http://www.soe.uri.edu) for additional information.

Applications for admission to teacher education programs are normally submitted during the sophomore year. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) scores on standardized test(s) of basic skills; 4) the student's academic record, including a cumulative quality point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better. Students applying to the early childhood education program must attain a C or better in HDF 203 or

equivalent for acceptance into the program.

Students should consult with the elementary or HDF advisor at University College, the Office of Teacher Education, or the HSS advisor at the Providence Campus.

Due to limited staff and facilities, admission to the programs in early childhood and elementary education is limited. Some applicants meeting the minimum requirements may not be admitted due to limited space. Students should check with the School of Education, the Department of Human Development and Family Studies, or their University College advisor as early as possible for additional information.

Students denied admission can petition the department for a review of the decision. In such cases, the school's screening committee meets to consider the appeal.

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students can reapply for admission but should understand that this may delay their anticipated graduation date.

**Program Requirements.** For courses required for early childhood education, see "Human Development and Family Studies" on the next page. For more information on teacher education programs, see pages 38-40. For graduate teacher education programs, see the "Graduate Programs" section.

Students who are admitted to the elementary education program are required to complete a B.A. degree. Students must select a major in the College of Arts and Sciences in addition to the major in elementary education and must fulfill the basic liberal studies requirements of the College of Arts and Sciences. See program requirements in the College of Arts and Sciences section.

The professional sequence courses required for elementary education are: EDC 250, 312, 102 or 360, 402, 424, 425 or HDF 302, 452, 453, 454, 455, 456, 457, 458, 459 and EDC 460. These courses are taken prior to student teaching. EDC 484 and 485 make up the student teaching experience. The following are also required and can be taken as part of the ba-

sic liberal studies requirements: COM 101, HIS 142, PSY 113, 232, WRT 101, and a one-credit health education course or equivalent. Students should contact the School of Education for more details.

Students seeking to teach in a middle school (grades 5-8, 6-8, 7-8) must obtain a middle level endorsement and be eligible for elementary or secondary certification. The professional sequence courses required for middle level endorsement are EDC 400 and a course in adolescent education psychology. These courses should be taken prior to student teaching. EDC 484 and 485 make up the student teaching semester. Students seeking a middle level endorsement are required to teach in a middle school in addition to their elementary or secondary placement. Admission to the middle level endorsement program is contingent upon acceptance to the elementary or secondary education program. The middle level endorsement also requires a concentration of 21 semester hours in one of the following areas: English/language arts, mathematics, science, social studies, and foreign languages. Students should see an education advisor for specific course requirements.

The professional sequence courses required for secondary education are: EDC 250, 312, 102 or 360, 371, 430, 431, and 448. These courses are taken prior to student teaching. EDC 484 and 485 make up the student teaching semester. PSY 113 and HDF 310 or EDC 415 are also required.

Students pursuing a program in secondary education normally obtain a B.A. degree, double majoring in education and their subject matter specialization, although a B.S. degree in secondary education is available in some specialization areas. Secondary education programs are offered in biology, chemistry, English, general science, history, mathematics, modern language, physics, and social studies.

Students in all programs must maintain minimum quality point averages of 2.50 overall, 2.50 in their education major, and 2.50 in their academic major area. To be eligible for student teaching, students must earn a grade of at least a C in EDC

430 and 448 (secondary); EDC 424, 425, 452, 453, 455, 456, 457, and 458 (elementary); HDF 303, EDC 424, 426, and 429 (early childhood). Failure to maintain these grades and/or averages will result in "program probation," a one-semester period during which students have the opportunity to earn acceptable grades but may not student teach. Failure to return grade averages to acceptable standing after one semester leads to dismissal from the program.

The major in elementary education requires 128 credits; secondary education requires 120 credits.

The School of Education has designated EDC 485 as its **capstone** course.

## Human Development and Family Studies

The curriculum in human development and family studies leads to a Bachelor of Science degree. The department also offers a certification program in family financial counseling and planning, as well as the Master of Science degree (see "Graduate Programs").

The undergraduate B.S. curriculum provides a general background for work with children, families, and adults. Most professions in human development and family studies require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed, however, as professionals in nursery schools, child care centers, institutions and hospitals, and in recreational, child guidance, casework, and other community agencies. Students completing the program in family financial counseling and planning are employed in agencies providing family financial and credit counseling services.

Students seeking admission to this bachelor's degree program must complete the following courses with an overall quality point average of 2.00 or better prior to acceptance for admission: HDF 200 or 201, PSY 113, any 100- or 200-level sociology course, and three general education credits in mathematics.

Students are required to complete the following core curriculum: 1) a 1-credit personal and career development course, HDF 180; 2) 15 credits of core courses including: HDF 200, 201, 202, 205, and 230; 3) any two development courses with a concurrent 1-credit observation/participation experience—courses include HDF 203 and 204; 306 and 307; 310 and 311; 312 and 313; 314 and 315; 6 to 15 credits of senior-level field experience chosen from the following options—HDF 480, 481; EDC 484, 485 (early childhood education students only); HDF 497; and the OIEE Internship Program (see page 41).

Additionally, students are required to complete a 12-credit concentration in one of the following two areas:

*Professional Content for Child Settings:* any 12 credits—HDF 357, 400, 430, 432, 434, 455 and 456, HDF 302 or EDC 425.

*Professional Content for Adolescent, Adult, Aging and Family Settings:* any 12 credits—HDF 357, 418, 421, 428, 430, 431, 432, 433, 434, 437, 440.

To enhance their concentrations, students must also complete 12 credits of professional electives including HDF 450. Professional electives must be approved in consultation with an advisor, and 9 of the 12 credits must be at the 300 level or above. Field experience does not meet this requirement.

Students must have from 21 to 30 credits of free electives to reach the 120-credit B.S. degree requirements.

For information on transferring into this program, see page 100.

**Certification Program in Family Financial Counseling and Planning.** HDF 200, 201, and 205 must be completed prior to admission into this program. Students will then select two courses from HDF 210, 225, and 428; take HDF 418, 424, 426, 450, and 451; and HDF 477, 478 for their senior fieldwork experience.

**Early Childhood Education.** A portion of the courses in the HDF curriculum, plus certain others in education, meet the requirements for the initial Early Childhood

Education Certificate (nursery through grade 2) in Rhode Island. Students who wish to meet the requirements for this certificate in Rhode Island must apply to Early Childhood Education through the Office of Teacher Education. See pages 38–40 for admission requirements, certification in other states, and other information regarding teacher education.

Students complete an application and develop an admission portfolio during the sophomore year. The portfolio includes materials in the following areas: interpersonal and communication skills, academics, experience with children in community settings, and diversity experiences. Students must sit for an interview and take several examinations. Because there are only nine credits of free electives in the program, early consultation with an HDF advisor is important if students are to finish their degree in a timely manner.

URI's curriculum, shown below, meets the mandates for beginning teachers set by Rhode Island's Department of Education. Curriculum requirements for the Early Childhood Education (ECE) Certificate are as follows (in this order).

Prior to acceptance into early childhood education: 1) 39 credits of general education courses (to be taken prior to formal application, including EDC 102, 250, and 312, and NFS 207); after acceptance into ECE program: 2) 16 credits of core courses including HDF 180, 200, 201, 202, 205, and 230; 3) professional content courses totaling 13 credits; these are specific courses that are already required plus one 400-level course (HDF 203 and 204, HDF 302 or EDC 425, HDF 357, HDF 400 or 432); 4) certificate program (total 27 credits)—EDC 102, 250, 312, 402, 426 and 350, 429, 424; HDF 301, 303 and 304; and 5) final 15-credit senior-level field experience, EDC 484 and 485 Student Teaching and Seminar.

To be eligible for student teaching, students must maintain a quality point average of 2.50 overall and 2.50 in the major, and attain a grade of at least C in HDF 203, 301, 303, EDC 424, 426, and 429. Failure to maintain these averages will result in "program probation," a one-

semester period during which students have the opportunity to earn acceptable grades but may not continue on the early childhood course sequence or student teach. Failure to return grade averages to acceptable standing after one semester will lead to dismissal from the program. Students who perform inadequately on the standardized tests are required to take additional preapproved courses prior to student teaching.

URI's early childhood education program totals 111 credits plus 9 credits of free electives; 120 credits are required for graduation.

## Human Science and Services

This curriculum leads to the Bachelor of Science degree in human science and services. The program is interdisciplinary and allows students to build academic programs consistent with their personal and career goals.

The program provides students the opportunity to develop individual learning plans, to learn in a broader variety of settings, and to document and assess their own learning and development under the guidance of a faculty committee. This major appeals to a small number of students (up to 15 per year) who want to choose their own learning goals, believe that these goals can be reached by a broad variety of means, desire to work closely with a small group of faculty members, and seek to strengthen their skills at reflection and self-assessment.

The program is designed primarily for students interested in the broad field of human science and services along with a combination of supporting or applied areas. Career opportunities are varied and include entry-level positions in fields such as health, recreation, instruction and training, family services, and consumer services. Many professional areas in human services require graduate study for significant career advancement; this program is also designed to serve as preparation for a variety of graduate programs. Close contact with an academic advisor is strongly recommended for students in this program.

Required course work includes: PHL 217, PSY 113 or SOC 100 and ECN 100 or PSC 113 (PHL 217 may be taken as part of the general education requirements for Letters; the other courses may be taken as part of the general education requirements for Social Sciences). A course in ethics is strongly recommended. In addition, students complete a core in human science and services: HDF 200, 201; HSS 120, 140, 141, 320, 350, and 480 [capstone]. Each student will work with a small committee of faculty members to develop a plan. Some of the credits in the major will be from conventional University courses, but some will not. A minimum of 24 and a maximum of 33 credits must be earned from sources that are *not* conventional three-credit seat-based courses. These could be internships or other experiences designed by the student and approved by the committee. To provide students a means for earning such credits, the following courses have been developed: HSS 170, 270, and 470. The program requirements also include electives (15 credits).

A total of 120 credits is required for graduation.

## Physical Education

This curriculum leads to a Bachelor of Science degree with a major in physical education. The Master of Science program is described in "Graduate Programs."

The major is designed for students who plan to pursue careers in the broad field of health, physical education and exercise science. Students can prepare for certification as public school teachers (physical education K-12) with additional study opportunities in athletic coaching, endorsement in adapted physical education, and health certification. For those interested in non-teaching careers in health and fitness (fitness instruction, strength training, cardiac rehabilitation, nutrition counseling) or in preparation for graduate study in health care, options are offered in physical fitness and wellness, exercise science, and general.

URI's Department of Physical Education and Exercise Science offers up-to-date re-

search facilities, including a biochemistry laboratory, electron microscopy lab, and an exercise testing laboratory with treadmill, ECG monitoring, and metabolic testing equipment. A weight management clinic is also located at Independence Square, and a fitness and wellness laboratory is located in the Tootell Complex.

Students seeking admission to this program must have completed 24 credits, possess a minimum GPA of 2.00, and have completed BIO 104B and BIO 121, each with a grade of C (2.00) or better, to transfer.

**Physical Education Options.** The *general option* is designed for students who desire a broad scope to their education, and for students transferring into the department. Students are strongly advised to seek guidance from their advisor in planning their course of study and choosing a focus area. The following options offer more focused studies for students.

The *teacher certification option* is designed for students seeking teacher certification in physical education at the elementary and secondary levels. The curriculum is also flexible enough to provide additional areas of study in teaching, coaching, athletic training, health certification, and endorsement in adapted physical education. Completion of the NCATE-approved certification program fulfills the requirement for teacher certification in Rhode Island and 34 other states. Students interested in undergraduate teacher education programs must apply for admission to URI's Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. A departmental screening committee reviews applications. The committee's decision is based on recommendations from URI faculty, writing sample, interview with presentation of admission portfolio, scores on standardized test(s) of basic skills, and academic record, including at least 30 credits of coursework including PEX 270, and an overall and program-specific cumulative QPA of 2.50 or better. Students must have received a grade of C or better in COM 101 or 103



and WRT 101. If denied admission, students can petition the department for a decision review. Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to a teacher education program but should understand that this may delay their anticipated graduation date. Students in the physical education teacher education program are required to have a cumulative quality point average from courses in the department of 2.70 or higher before student teaching (EDC 486/7).

*Health Fitness and Exercise Science Options.* This option (formerly known as fitness and wellness) is designed for students interested in becoming health/fitness practitioners. This includes careers in corporate fitness, commercial fitness centers, community fitness and wellness centers, and clinical or hospital-based fitness and wellness centers. This option also prepares students for graduate programs in exercise science or fitness management. Read on for information on admission into this option and its QPA requirement. The *exercise science option* is for students considering careers or graduate degrees in health care professions, including exercise physiology, physical therapy, physician's assistant, and occupational therapy. During their sophomore or junior year, students intending to pursue a graduate degree are encouraged to contact prospective schools for specific requirements.

Students interested in the undergraduate programs in exercise science or health fitness must apply for admission into these programs, normally during the sophomore year. A departmental screening committee will review applications. The committee's decision is based on recommendations from faculty and others with knowledge of the candidate's experience or interest in working in these fields, writing sample expressing career goals and previous experience in the field, and academic record, including a cumulative QPA of 2.50 or better. If denied admission, students can petition the department for a decision review. Applicants who fail to gain admission should seek counsel from an appropriate

advisor. Students may reapply for admission to the exercise science or health fitness program but should understand that this may delay their anticipated graduation date.

Students in these programs must also have a cumulative quality point average from courses in the department of 2.70 or higher before internships (PEX 484).

**Degree Requirements.** The following courses are required of all students in physical education and exercise science: URI 101 (1 credit), 39 credits of general education including WRT 101, COM 101 or 103, BIO 104B, CHM 103, PSY 113, and PSY 232. Core curriculum requirements (22 credits) include BIO 121, 242, PEX 334, 335, 123, 272, 369 and 370. A total of 128 credits are required for graduation. Specific requirements for the different degree options are listed below.

*Teacher certification* requirements include: PEX 270, 304, 305, 310, 314, 315, 322, 324, 380, 382, 410, 415, EDC 312, 485, 486/487, 7 credits of practicum activity including PEX 120, 222, 322, swimming, 1-1/2 credits of PEX 115, and 1-1/2 credits of PEX 215. Students in this option have seven credits of professional electives and eight credits of free electives. They are encouraged to use these credits toward health certification and the endorsement in adapted physical education (see advising sheets).

Requirements in the *health fitness* option include PEX 105L, 120, 243, 275, 325, 420, 425, 484, 486, NFS 207, plus 3 credits of an approved 400-level course in health promotion. Additionally, to reach the required 128 credits, students take 11 credits of free electives and select 18 credits from the following specialized electives: ACC 201, 202, BCH 311, BSL 333, CHM 124, COM 200, 314, NFS 441, 444, HDF 150, 220, 450, MGT 110, 300, 301, MKT 301, PEX 391, PHY 111, 185, 112, 186, PSY 103, 479H, WRT 227, 235.

The *exercise science* option requires CHM 105, 124, 126, BIO 244, BCM 311 and 312, NFS 207, PEX 243, 275, 325, 420, 484, and 486. Additionally there are 15 credits selected from specialized electives and 11 credits of free electives. Stu-

dents may need to use free electives to complete requirements for many graduate programs. Specialization electives that students may choose from are BCH 464, MIC 211, SOC 100, PEX 391, PHY 111, 185, 112, 186, PSY 300, STA 307, 308, 409, 412. In addition, students applying for URI's physical therapy program must take the following classes as specialization or free electives: PHY 111, 185, 112, 186, MTH 111, and a basic statistics course.

Requirements specific to the general option include PEX 120, 130, 280, 243, 270, 275, 322, 375, NFS 207, CSC 101, and HDF 357. Additionally, students must complete 18–21 credits in a department-approved focus area, or complete a University-approved minor. Students also complete courses to fulfill the general education requirements, and the physical education and exercise science core courses that are common to all options in the department.

## Textile Marketing

This interdepartmental curriculum leads to a Bachelor of Science degree. It combines the professional requirements of a major in textiles with the requirements of the College of Business Administration and is designed to prepare students for wholesale and retail marketing positions in the textile industry.

Textile marketing managers are responsible for planning and directing the flow of textile products from manufacturers to consumers. The major, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of styling and design, manufacturing, market research, consumer behavior, advertising, promotion, fashion, and sales. Students with Spanish language skills have an opportunity to specialize in a Latin American option. Today, many international opportunities exist to buy and sell to Latin America.

Freshmen who complete a minimum of 27 credits with an overall grade point average of 3.00 or higher and who complete BAC 110 and 120 (or their equivalents CSC

101 and MTH 131) with a B or higher will be admitted to the College of Human Science and Services at the end of the freshman year. Student who have a minimum of 42 credits, a grade point average of 2.40 or higher, and who have successfully (with an average of 2.40 or higher) completed BAC 110, 120, 201 (or their equivalents CSC 101, MTH 131, STA 308), ACC 201 and ECN 201 after the first semester of the sophomore year will be admitted to the College of Human Science and Services. Students not meeting these requirements may be eligible to transfer to the textiles, fashion merchandising, and design program.

Before admission to the degree-granting college, students must complete the general education mathematics requirement.

Students in this curriculum must take the following courses: TMD 103, 224, 303, 313, 240, or 340 or 440, 402, 403, 433, and three credits of a TMD elective; CHM 105, 126; MTH 131; STA 308, 412; CSC 101; ACC 201 and 202; MGT 300 or 301; BSL 333; MKT 301, 311, 415, and nine credits of MKT electives. Students must also take the following courses to complete general education requirements: CHM 103, 105, 124, 126; and ECN 201, 202.

A total of 120 credits is required for graduation.

## Textiles, Fashion Merchandising, and Design

This curriculum leads to a Bachelor of Science degree. The Master of Science (M.S.) program is described in the "Graduate Programs" section.

The major is open to men and women with ability and professional interest in the artistic and technical aspects of the subject. Specialized programs of study prepare students for positions in the merchandising of apparel and interior furnishings, textile and apparel manufacturing, consumer services, or museum work. Qualified students can prepare for graduate studies.

The following core courses are required: ART 101, 103, or 207; TMD 103; 224; 232; 226 and 326 or 426, or 222 or

325 and 327; 303;<sup>1</sup> 313; 240, 340, or 440; 402, 433;<sup>2</sup> HDF 225; ECN 201 and 202; CHM 103, 105, 124, and 126. Twelve credits of TMD electives (six credits must be upper-level courses and no more than three credits from TMD 361, 362, or 461, 462) and 18 credits of professional electives (nine credits from any one area) are required. Students should elect TMD electives and professional electives in accordance with the specializations outlined below. Students must complete 24 credits with an overall 2.00 GPA and complete CHM 103, 105, and TMD 103 and the general education mathematics requirement with a 2.00 average to transfer to the College of Human Science and Services. (The same requirements apply to students wishing to transfer into TMD from other majors.) Students must complete TMD 103 and CHM 103 and 105 with a grade of C or better before admission to the program. TMD 402 is the **capstone** experience in this major.

A total of 125 credits is required for graduation.

**Apparel Studies.** Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 325, 327, 335, and an additional 18 credits of professional electives<sup>3</sup> from art, management, marketing, or theatre.

**Fashion Merchandising.** Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 232, 327, 332, 422, 432, 442, 452, and an additional 18 credits of professional electives<sup>3</sup> from accounting, business law, management, management science, marketing, and/or art.

**Interior Furnishings and Design.** Students choosing this area of emphasis should select 12 credits of electives from TMD 226, 326, 426, 440, and an additional 18 credits of professional electives<sup>3</sup> from art and/or business.

**Textile Science.** Students selecting this area of concentration should take TMD 403 and 413 as well as additional chemistry, chemical engineering, and/or statistics courses. An internship in textile manufac-

turing is recommended. By the end of the sophomore year, students should file a program of study with their advisor. The 18 credits of professional electives<sup>3</sup> should be selected from: MTH 111, 131; PHY 111 and 112 or 213 and 214; STA 308 or 412 or CSC 201; CHM 112, 114, 212, 226, 227, or 228.

Students in this option are encouraged to broaden and deepen knowledge of textile science by enrolling for one or two semesters at another university through an exchange program. Through a special arrangement, URI students may study for a semester or year at the textile sciences department at the University of Massachusetts–Dartmouth which has extensive textile manufacturing equipment and analytical instrumentation. Possible course work includes fiber science, yarn spinning, warp and weft knitting, jacquard or dobby weaving, composites, nonwovens, and manufacturing facilities design.

**General TMD Program.** Students may structure their own programs by concentrating course work in areas such as consumer studies, museum work, journalism, or gerontology. By the end of the sophomore year, students should file a program of study with their advisor. Selection of the 12 required TMD elective credits and the 18 professional elective credits<sup>3</sup> should strengthen career goals and interests.

**Art Minor.** Students with an interest in apparel design or interior design should consider a minor in art. The requirements for this minor are determined by the Art Department, and consist of 18 credits of any art or art history courses, 12 credits of which must be at the 200 level or above. The overall URI requirements for a minor apply (see page 34). Courses particularly appropriate to TMD can be determined by consultation with TMD and Art faculty.

<sup>1</sup> Organic chemistry is a prerequisite for TMD 303.

<sup>2</sup> Economics is a prerequisite for TMD 433 and possibly HDF 225.

<sup>3</sup> Courses related to the student's career goals, subject to approval by an advisor.

## COLLEGE OF NURSING

Dayle H. Joseph, *Dean*  
Ruth C. Waldman, *Assistant Dean*

The College of Nursing offers a curriculum leading to the Bachelor of Science (B.S.) degree. The college also offers the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees.

### Faculty

Professors Burbank, S. Kim, McGrath, J. Miller, Schmieding, and Schwartz-Barcott; Associate Professors Dufault, Feather, Joseph, Padula, and Yeaw; Assistant Professors Godfrey-Brown, Hames, Kwak, M. Sullivan, Viau, and Waldman; Clinical Associate Professor Mercer; Clinical Assistant Professors Coppa, Erickson-Owens, Evans, Gerzevitz, Haggerty, Martins, and M. Palm.

URI's baccalaureate program is designed to prepare students with academic and personal potential to become professional nurses. It aims to develop mature, well-informed graduates who will meet the challenges of health care delivery and continued learning.

Nursing is a creative activity that provides human services for the promotion of health, prevention of illness, and care of the ill. It is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities and the natural, biomedical, and social sciences. Students use a systems perspective as a conceptual base to nursing. This conceptual approach to nursing incorporates the whole person and his or her environment with the nursing process. Our nursing curriculum enhances students' ability to function professionally in community and home care settings, in keeping with the changes in the health care system.

Clinical practicums include experience in numerous community agencies, schools, nursing homes, clinics, physicians' offices, and hospitals throughout Rhode Island.

There are three routes to admission to the college's baccalaureate program:

1) *Students with no previous college study* begin their preparation in University College with a major in nursing. After completion of 37–50 credits (which must include required foundation courses) with a minimum 2.20 overall quality point average and a 2.20 quality point average in the foundation courses, they may apply for transfer to the College of Nursing. Priority is given to students with strong academic records and positive recommendations from faculty in introductory nursing courses.

2) *Students with college study in another major* or some nursing study in another baccalaureate program and a minimum of 45 completed credits, if accepted by the University, may be admitted directly into the College of Nursing. Students who transfer from another college or university are admitted into clinical nursing courses on a space-available basis. To enroll in clinical nursing courses, transfer students must meet the requirement of a minimum 2.20 quality point average overall and in the foundation courses. Grades from courses taken at the other institution are not included in the student's quality point average.

Because the number of students accepted into clinical courses is limited, transfer students are advised to contact the assistant dean before applying for admission to be sure of placement in a specific course.

3) *Registered nurse students* who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed competence in basic subject areas, they may demonstrate their mastery by completing the College Level Examination Program (CLEP) sponsored by the College Entrance Examination Board. Advanced credit allowances are based on a review of the candidate's test scores and preparatory experience.

R.N. students are required to take 18 credits of nursing courses as follows: NUR 246, 273, 346, 443, 444, 446 (or 503). They are also required to meet the remaining program specifications. R.N. students must have an active Rhode Island nursing license and malpractice insurance.

A total of 120 credits is required for R.N.s to earn the B.S. degree. The college also has an R.N. to M.S. program. Information can be obtained from the assistant dean.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters and one summer session. All students in the College of Nursing meet all the general education requirements of the University, as listed in "Undergraduate Program Requirements," pages 32–33. Entry into clinical courses is competitive and based on grade point average and the number of semesters students have been enrolled in nursing. Because of space limitations, students may have to wait one or more semesters before being accepted into NUR 203.

A minimum grade of C must be achieved in all required nursing courses and in each foundation course. Students will not be allowed to repeat a required nursing course more than once. The faculty reserves the right to require withdrawal from the college of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the dean for special program adjustments or when participating in the Honors Program.

General expenses are approximately the same as for other University students. Special items include uniforms, nursing equipment, transportation, one summer session, and lab fees for each clinical course. The use of an automobile or funds to meet public transportation costs is required for the clinical experiences. Students must maintain car insurance as required by state law.

The program is approved by the Commission on Collegiate Nursing Education and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure as a registered nurse (R.N.).

The law requires criminal background checks for persons providing care in community agencies.

## Curriculum Requirements

**Foundation Courses.** The following are required before transfer from University College: CHM 103 (3), 124 (3); NUR 103 (3); PSY 113 (3); BIO 121 (4), 242 (3), 244 (1); one writing (Cw) course (3).

The following are prerequisites for some nursing courses, and therefore are recommended during the first three semesters: NFS 207 (3); MIC 201 (4); PSY 232 (3); SOC 100 (3); STA 220 (3) or MTH 107 (3).

An example of the curriculum plan follows. (Individual programs may vary.)

### Freshman Year

*First semester: 14 credits*

- 4 BIO 121 Human Anatomy
- 3 SOC 100 General Sociology
- 3 CHM 103 Introductory Chemistry Lecture
- 1 URI 101 Freshman Seminar
- 3 General Education requirement (Cw)

*Second semester: 16 credits*

- 3 BIO 242 Human Physiology
- 1 BIO 244 Human Physiology Laboratory
- 3 CHM 124 Introduction to Organic Chemistry
- 3 PSY 113 General Psychology
- 3 NUR 103 Professional Practice in Health and Illness
- 3 General Education requirement (C)

### Summer Session

3–6 General Education or free elective requirements (to reduce junior year requirements)

### Sophomore Year

*First semester: 16 credits*

- 4 MIC 201 Introductory Medical Microbiology
- 3 STA 220 Statistics in Modern Society (or MTH 107 Introduction to Finite Mathematics)
- 3 PSY 232 Developmental Psychology
- 3 NUR 203 Comprehensive Health Assessment
- 3 NFS 207 General Nutrition

*Second semester: 15 credits*

- 3 NUR 213 Pathophysiology
- 3 NUR 223 Health Promotion: Nursing Strategies and Interventions
- 3 NUR 224 Practicum in Health Promotion Nursing
- 3 BMS 225 Pharmacology and Therapeutics
- 3 General Education requirement

### Junior Year

*First semester: 18 credits*

- 6 NUR 323 Health Restoration: Nursing Strategies and Interventions
- 6 NUR 324 Practicum in Health Restoration Nursing
- 3 NUR 273 Critical Thinking and Research in Nursing
- 3 Free elective

*Second semester: 16 credits*

- 3 NUR 333 Psychiatric-Mental Health Nursing
- 3 NUR 334 Practicum in Psychiatric-Mental Health Nursing
- 3 NUR 343 Nursing in Childbearing and Reproductive Health
- 3 NUR 344 Practicum in Childbearing and Reproductive Health Nursing
- 4 Free electives

### Senior Year

*First semester: 15 credits*

- 3 NUR 423 Chronic Health Alterations: Strategies and Interventions
- 3 NUR 424 Practicum in Nursing of Older Adults with Health Alterations
- 3 NUR 434 Practicum in Nursing of Children with Health Alterations
- 6 General Education requirements

*Second semester: 15 credits*

- 3 NUR 443 Nursing of Vulnerable Populations in the Home and Community [capstone]
- 3 NUR 444 Practicum in Nursing of Vulnerable Populations [capstone]
- 3 NUR 454 Theories, Issues, and Practice in Professional Nursing [capstone]
- 6 General Education requirement

**Required Nursing Courses.** The following 60 credits are required: NUR 103, 203, 213, 223, 224, 273, 323 (6 credits), 324 (6 credits), 333, 334, 343, 344, 423, 424, 434, 443, 444, and 454.

### General Education Requirements and Electives.

The general education requirements must be completed with the exception that one of the following divisions may be reduced by three credits: fine arts and literature (A), letters (L), or foreign language and culture (F).

Seven credits of free electives are required. A total of 125 credits is required for graduation.

**Minor in Thanatology.** For information on this interdisciplinary minor dealing with loss, death, and grief, please turn to page 37.

## COLLEGE OF PHARMACY

Donald E. Letendre, *Dean*  
Joan M. Lausier, *Associate Dean*

Entering freshmen are admitted to URI's six-year entry-level Doctor of Pharmacy (Pharm.D.) degree, described on the next page. The college also awards two graduate degrees: the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) in pharmaceutical sciences, both offered by all departments except Pharmacy Practice.

The six-year Doctor of Pharmacy curriculum is patterned on accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education, and other interested organizations. The Doctor of Pharmacy is accredited by the American Council on Pharmaceutical Education (20 North Clark Street, Suite 2500, Chicago, Illinois, 60602; [www.acpe-accredit.org](http://www.acpe-accredit.org)).

The program in pharmacy provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration, and research.

Of prepharmacy students requesting transfer from University College to the College of Pharmacy at the end of three semesters, priority will be given to those applicants having a 2.50 quality point average or better in required preprofessional courses (CHM 101, 102, 112, 114, and 227; BIO 101, 121, 242, and 244; MTH 131; and MIC 201) with no grade less than C- in any of these courses, and an overall quality point average of 2.00. Applicants with an average between 2.00 and 2.50 in these courses will be considered for admission on a competitive basis along with other URI undergraduate students and transfer students from other institutions. Successful candidates must

raise their quality point average to 2.50 in prerequisite courses before beginning the third year of study. Applicants with a quality point average of less than 2.00 for the designated prepharmacy courses will not be considered for admission to the college. At the end of four semesters, the foregoing courses plus CHM 226, 228, STA 307, and BCH 311 (or equivalent courses where permitted), will be included in the calculation of the preprofessional quality point average.

Beginning in the third year of the program, students should have their own laptop computer for use in the classroom. There are lease and purchase options which the college can assist the student in procuring.

Unless otherwise indicated, courses offered by the college are restricted to pharmacy majors.

Students must earn a minimum quality point average of 2.00 overall and 2.20 in all professional courses in order to qualify for graduation in the Pharm.D. program. Students can repeat up to ten credits of pharmacy courses in which they received a C or less in order to achieve the 2.20 QPA graduation requirement.

*The student whose cumulative QPA in professional courses falls below a 2.00 at the end of any semester will be dismissed from the program. Students will not be allowed to proceed into their sixth-year rotations without at least a 2.00 QPA in required professional pharmacy courses.*

Professional and/or legal exigencies arise from time to time which may necessitate changes in a pharmacy course, progression, and/or graduation requirements. Students should review their status with academic advisors on a timely basis and refer to current publications for updated information.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. (See page 31.)

Transfer into the College of Pharmacy from another institution or other programs at the University is highly competitive.

Preference is given to students who have already completed the science courses equivalent to those required in the prepharmacy curriculum, as previously described. Students may transfer credits for courses in which they have earned a C or better. Questions concerning the transferability of specific courses and of the evaluation process should be directed to the associate dean of pharmacy.

### Faculty

*Applied Pharmaceutical Sciences:* Professor Needham, *chairperson*. Professors Kislalioglu, Lausier, Luzzi, C. Rhodes, Rosenbaum, Willey Tempkin, and Zia; Assistant Professor Akhalghi; Adjunct Professors Breuer, Ette, Gerraughty, Hoffmann, Malick, Monkhouse, Ryan, and Sado; Adjunct Associate Professors Birmingham, Mojaverian, Shah, and Szymanski; Adjunct Assistant Professors Benoit, Corvese, Gann, Grant, Himmel, Holm, Marcoux, Molzon, and Rudnic; Adjunct Instructor Ortiz; Research Professor Larrat.

*Biomedical Sciences:* Professor Shaikh, *chairperson*. Professors Chichester, Rodgers, Shimizu, Xan, and Swonger; Associate Professors Babson, Cho, Yan, and Zawia; Assistant Professors R. King, K. Parang, and D. Rowley; Adjunct Professors Boekelheide and Kobavanti; Adjunct Associate Professors Black, Ku, Munns, and Nagata; Adjunct Assistant Professors Fisher, Hilliard, Jay, Omar, and Schuler; Professors Emeriti Bond, C. Smith, and Worthen.

*Pharmacy Practice:* Professor Hume, *chairperson*. Professors Barbour and Owens; Associate Professors Dufresne, Geletko, and Luisi; Assistant Professors Feret, Lin, Pawasauskas, Rogowski, and Taveira; Adjunct Professors Mahoney, Sesin, and Soja; Adjunct Associate Professors Charpentier, Cohen, Feeney, and Melbourne; Adjunct Assistant Professors Bowen, MacDonnell, and MacGrath.

## Six-year Entry Level Pharm.D. Curriculum Requirements

A total of 192 credits is required for graduation. Proficiency in the American Red Cross standard first aid and community CPR is also expected of each student prior to graduation.

### First Year

*First semester: 15 credits*

CHM 101 (3), CHM 102 (1), a 3-credit University-approved English communication course (except BGS 100)<sup>1</sup>, BIO 101 (4), one 3-credit elective, and URI 101 (1).

*Second semester: 17 credits*

CHM 112 (3), CHM 114 (1), MTH 131 (3), a 3-credit University-approved English communication course (except BGS 100)<sup>1</sup>, BIO 121 (4), and one 3-credit elective.

### Second Year

*First semester: 17 credits*

CHM 227 (3), ECN 201 (3), MIC 201 (4), BIO 242 (3), BIO 244 (1), and one 3-credit elective.

*Second semester: 17 credits*

BCH 311 (3), CHM 228 (3), CHM 226 (2), STA 307 (3), and 6 credits of electives.

### Third Year

*First semester: 17 credits*

PHP/BMS 311 (2), BMS 321 (2), BMS 313 (2), APS 314 (3), APS 315 (2), APS 324 (3), APS 318 (1), PHC 317 (1)<sup>2</sup>, and PHP 350 (1).

*Second semester: 17 credits*

PHP/BMS 312 (2), BMS 322 (2), PHP 324 (2), APS 316 (3), BMS 325 (2), BMS 326 (1), PHC 327 (1)<sup>2</sup>, PHP 351 (1), and one 3-credit elective.

### Fourth Year

*First semester: 15 credits*

PHP/BMS 409 (2), BMS 421 (2), PHP 413 (2), APS/PHP/STA 411 (3), BMS 416 (1), NFS 444 (3), PHC 417 (1)<sup>2</sup>, and PHP 450 (1).

*Second semester: 15 credits*

PHP/BMS 410 (3), BMS 422 (2), PHP 414 (2), APS 403 (3), Professional Tracking (3), PHC 427 (1)<sup>2</sup>, and PHP 451 (1).

### Fifth Year

*First semester: 17 credits*

APS/PHP 404 (3), BMS 521 (2), PHP 513 (2), APS 503 (2), BMS/PHP 518 (3), PHP/APS 515 (1), and PHC 517 (1)<sup>2</sup>.

*Second semester: 17 credits*

PHP/BMS 510 (2), BMS 522 (2), PHP 514 (2), APS 504 (3), PHP/APS 516 (1), PHC 527 (1)<sup>2</sup>, and Professional Tracking (6).

### Sixth Year

*First semester: 14 credits*

*Second semester: 14 credits*

To complete the curriculum, students must complete PHP 591, 592, and 593 (Clinical Clerkships, 7 credits each) plus PHC 594 (Tracking Practicum, 7 credits) during the sixth year in any sequence. These are all **capstone** experiences in the program.

### Doctor of Pharmacy Degree Tracks.

As part of URI's six-year degree program, students elect professional coursework in areas of individual interest. This gives them an opportunity to focus their training on a particular area of practice, through 12 credits of coursework and a focused rotation (PHC 594).

**Community Practice.** URI's community pharmacy track enhances students' knowledge of pharmaceutical care in the community pharmacy setting, which continues to be a strong job market for graduates. Community pharmacists require business acumen, knowledge of self-care practices (nonprescription medications, herbal and complimentary medicine, medical devices) and must serve specific customers, such as pediatric and geriatric patients. PHP 440 and PHP/BMS 519 are required, plus two electives from PHP 542, BMS/PSY 436, BMS 533, PSY 460, COM 320, 337, NFS 551, 552, EXS 563, 564, 565, HSS 530, and WRT 333 (others may be substituted

with approval). The practicum rotation PHC 594A can accommodate interest in popular areas of disease management such as diabetes, hypertension, and HIV.

**Basic Research.** The focus areas of this track in URI's Department of Biomedical Sciences are specialized training in theory and practice of laboratory research techniques; evaluation and quantification of results; understanding and critical interpretation of scientific literature; oral and written communication of hypotheses, methods, and interpretation; personal experience in carrying out basic scientific research; and awareness of career options for which basic research is an important component. BMS 520, 525, and 535 are required. Students elect four credits from BMS 519, 530, 533, 544, 546, 550, 572, 633, 635, 636, 641, 642, 644, and 691. Students also take PHC 594(H) on-site directed by a BMS faculty member, or off-site at a private firm.

**Cosmetics and Personal Care Products Technology.** This track provides in-depth understanding of cosmetics, self-care products, and dermatologicals, from conception to marketing to consumer use. Students will take an array of courses to understand their utility and marketing. APS 498, 530, and 532 are required courses. Students elect two courses (six credits) from APG 405, APS 453, 461, 498, 530, 531, 621, 622, CSC 201, IME 533, PSY 384, MGT 402, BMS 445, 533, BSL 450, MKT 311, and 331. The experiential rotation, PHC 594G, will take place in hospital-based dermatology practices, over-the-counter industry, government regulatory agencies, the department of public health, and/or advertising/marketing organizations.

**Drug Development and Regulation.** Students in this track explore areas of interest in pharmacokinetics, biopharmaceutics, and scientific aspects of the regulations affecting the design, production, evaluation, and distribution of drug products. Their required courses are APS 621 and 670. Stu-

dents select three courses (8 credits) from the following: APS 540, 550, 497 or 498, CSC 201, IME 533, and one 400-level statistics course in clinical trials methods. For their experiential rotation (PHC 594F), students undertake a research practicum, working in close collaboration with a faculty member and other graduate students.

*Drug Information and Technology.* This track provides basic training for candidates interested in developing their drug information and/or computer skills. It is of special interest to students interested in careers in pharmaceutical-related information services. The track will strengthen computer skills, expand knowledge of computer and network systems, provide experience in the development and analysis of pharmaceutical-related databases, and give students practical experience in providing drug information to health professionals and the public. Courses are taught by URI's College of Pharmacy and College of Business Administration. PHC 305 and MSI 310 are required. Students also elect two courses from BAC 110 (or equivalent), COM 320, 337, MSI 301, 410, 420, 430, 440, APS/BMS/PHP448, BMS 535, BMS/PHP 519, PHP 501, 542, LSC 504, 549, and take one rotation: PHC 594C, 594D, 594E, or 594K.

*Formulation.* The formulation track gives students the opportunity to explore the formulation, manufacture, and compounding of various pharmaceutical products and the concepts of industrial pharmacy. It provides a basic understanding of the

physicochemical concepts that are essential in understanding the processes of pharmaceutical technology. APS 622 and 631 are the required courses. For electives, students pick two courses (six credits) from APS 621, APS 660, BMS 525, and IME 533 (or equivalent). Finally, PHC 594I focuses on the development, formulation, stability studies, and manufacture of a drug product.

*Pharmacoeconomics and Pharmacoepidemiology.* This track gives students the opportunity to explore management, information systems, public health, and economics. Of primary importance will be the development of skills necessary for medical decision-making, formulary evaluation, organizational management, public health practice, and the efficient delivery of appropriate healthcare. The role of pharmaceuticals will also be emphasized. APS 550 and 580 are required. Students elect three courses (nine credits) from the following: APS 406, 440, 453, 540, 570, APS 565x Managed Care Pharmacy, APS 580, APS 590x Quality Management, APS 640, MSI 664, MGT 303, 402, MSI 310, MKT 301, 331, INS 433, ECN 202, HSA 360. The practicum rotation PHC 594J focuses on the development of management and public health skills in community pharmacy, institutional healthcare, chain pharmacy, pharmacy benefit management, consultation, and government agency environments.

*Pharmacotherapy Practice.* This track provides students with the knowledge and skills necessary to deliver pharmaceutical care in inpatient and ambulatory practice sites. It is designed to expand students' clinical knowledge base and application of pharmacotherapy to diverse patient populations. Therapeutic issues related to special populations of pediatrics and geriatrics will be discussed. This track allows students to pursue advanced post-graduate clinical and research training in a variety of clinical areas, as well as careers as clinical practitioners providing general or focused care in acute care and primary care sites, managed care organizations, academia, industry, and government. Students in this track select two courses (6 credits) from PHP 430, 460, 520, and 560; and two elective courses (6 credits) from PHP 430, 440, 498–499, 519, 520, 542, and 560; other courses may be chosen with the approval of the track advisor. Finally, they take PHC 594B in a setting that reflects the pharmacotherapy content studied.

<sup>1</sup> CMS 101 (six credits) may be substituted for the writing requirement.

<sup>2</sup> Interactive learning courses will be shared by PHP, BMS, and APS under the code of PHC.

# GRADUATE ADMISSION AND REGISTRATION

Persons holding the baccalaureate degree and wishing to take graduate-level courses at the University may do so through admission to the Graduate School.

## GRADUATE SCHOOL

Janett Trubatch, *Vice Provost for Graduate Studies, Research and Outreach*

Harold D. Bibb, *Associate Dean, Graduate School*

Janet M. Kulberg, *Associate Dean, Graduate School*

## Admission

Students may be admitted to URI's Graduate School as degree candidates or they may pursue postbaccalaureate work in nonmatriculating status (see next page). Admission to the Graduate School is based on academic qualifications and potential without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam era veterans.

A package of self-managed application materials can be obtained from the Graduate Admissions Office, University of Rhode Island, 208 Quinn Hall, 55 Lower College Road, Kingston, RI 02881-1966 or downloaded at [www.uri.edu/gsadmis/](http://www.uri.edu/gsadmis/). A Zip code should be included in the applicant's return address. Inquiries concerning particular degree programs or courses of instruction should be addressed to the appropriate department chairperson or the graduate program director, as listed in the "Graduate Programs" section of this catalog.

The completed application package must be sent directly to the department or program to which admission is sought. Final decision on admission rests with the Graduate School, which, after considering the recommendation of the department concerned, will notify the applicant of the decision.

Where admission to a doctoral program is possible for those holding the bachelor's degree and meeting other requirements, the Graduate School reserves the right to offer admission only to the master's program while postponing a decision on admission to the doctoral program until at least a substantial portion of the master's work has been completed.

Applications must be accompanied by a nonrefundable application fee: \$30 for in-state and \$45 for out-of-state residents (for residency requirements, see page 18). Simultaneous application to more than one department requires duplicate applications and credentials and separate application fees.

The completed application package and all supporting documents must be received by April 15 for summer admission, July 15 for fall admission, and November 15 for spring admission (dates for international applicants are below). The application package must be received by February 1 for consideration for financial aid for the following year. As indicated in the "Graduate Programs" section in this catalog, certain programs admit students only for the fall semester or have earlier deadlines. There is no assurance that applications completed after specified deadlines will be processed in time for enrollment in the desired semester. Admission is valid only for the term offered and must be reconsidered if a postponement is subsequently requested.

**International Applicants.** Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 (or 213 on the computer-based TOEFL exam) unless a higher minimum is listed under the admission requirements for the specific program.



Self-administered international application forms can be obtained from the Graduate Admissions Office, or downloaded at [www.uri.edu/gsadmis/](http://www.uri.edu/gsadmis/). The completed application package must be returned directly to the department or program to which admission is sought. Applications not received by February 1 for fall admission and July 15 for spring admission will be considered for the next admission period. Inquiries from international students concerning nonimmigrant visas, transfers, funding, etc., should be sent to the Office of International Students and Scholars. Inquiries concerning housing should be sent to the Department of Housing and Residential Life (for apartments on campus) or to Off-Campus Housing (for rooms, apartments, and houses in the nearby community).

**Transfer Credit.** Transfer credit can be requested for graduate work taken at other accredited institutions of higher learning. Under usual circumstances, such credits may not exceed 20 percent of the total credits required in the program. Doctoral candidates holding a master's degree in the same or a closely related area can request up to 30 credits from their master's degree. The transfer work must have been



taken at the graduate level (equivalent to the 500 level or higher in URI's course numbering system) and a passing grade earned at that institution. It must have been completed not more than five years prior to the date of admission into a master's program (ten years for the doctoral program) and must have a clear and unquestioned relevance to the student's program of study. The request for transfer credit should be accompanied by a proposed program of study and must have the approval of the student's major professor and the Graduate School. If transfer credit is desired for work taken elsewhere after a graduate student is enrolled at the University, *prior approval* must be obtained from the Graduate School.

**Degree Candidates.** Applicants must forward the completed self-managed application package, containing *all* of the requested materials, directly to the department to which admission is being sought. Where required, test scores in the appropriate nationally administered tests should be sent directly to the department by the testing service. Tests required for specific programs can be found in the "Graduate Programs" section. Scores (GRE, MAT, or GMAT) earned more than five years prior to the term of application will not be accepted. If test results exceed the five-year limit, applicants must retake the examination.

To be accepted as graduate degree candidates, applicants must have maintained an average of approximately B (3.00 on a 4.00 scale) or better in their undergraduate work. For programs that require standardized tests, students must also have satisfactory scores on the appropriate nationally administered test. Applicants with undergraduate averages below the B level may possibly be admitted with submission of other evidence of academic potential; i.e., satisfactory performance in postbaccalaureate work, professional experience as evidenced by publications or letters of recommendation, and/or high scores in the standardized tests referred to above. All students are expected to maintain a cumulative average of B (3.00) or

better. Students who do not maintain a cumulative B average will have their status reviewed and may be placed on provisional status or be dismissed. A student placed on provisional status must achieve a cumulative B average within one semester (or nine credits, if part-time) or be subject to dismissal.

**Advanced Standing.** Advanced standing refers to credits taken at URI by a nonmatriculating student, by a matriculating student while on nondegree status, or by a student in one degree program before acceptance to any other degree program. Credits earned at the University of Rhode Island by a nonmatriculating student may be applied as advanced standing toward degree requirements only upon the recommendation of the student's major professor and the graduate program director and with the approval of the Graduate School. For the credits to be applied to advanced standing, they must have been earned within a five-year period before the student matriculated into the degree program. For a master's degree program, advanced standing and transfer credit may not total more than 40 percent of the credits required for the degree. For Ph.D. candidates admitted without a master's degree, advanced standing may not total more than 20 percent of the credits required for the degree. In special cases, Ph.D. candidates admitted with a master's degree in the same or a closely related area may request up to nine credits of advanced standing. The request should be accompanied by a proposed program of study and satisfy the time constraints listed for transfer credit.

In certain cases, applicants who have been denied admission may be advised to take several courses in nonmatriculating status (see following) to provide a basis for later reconsideration of their applications. In such cases, these courses are usually regarded as if they were entrance deficiencies and are not accepted for advanced standing in minimum-credit programs of study.

**Nonmatriculating Status.** Individuals holding a bachelor's degree who are not

candidates for an advanced degree may take courses during the academic year or in the summer in nonmatriculating status. Normally, to take courses for personal satisfaction or professional advancement, postbaccalaureate students enroll in the Alan Shawn Feinstein College of Continuing Education. Any nonmatriculated student wishing to take courses on the Kingston Campus must file an application with Registration and Records. If nonmatriculated students later wish to be admitted to a degree program, they must complete the regular admission procedure.

Nonmatriculated students do not have the privileges regularly enjoyed by degree candidates. For example, on the Kingston Campus they may not register until one week before classes begin and must make payment before accessing the telephone registration system. Their enrollment is subject to the accommodation of degree candidates wishing to take these courses. In addition, there is a limit to the number of courses taken in this status that may be used as advanced standing to satisfy degree requirements. Nonmatriculated students are not eligible for financial aid.

## Registration

The responsibility for being properly registered rests with the student. Students must complete their registration within the time period announced by the University in the *Schedule of Courses*. The chairperson of the student's major department will assign an advisor to assist the new graduate student in planning a program. All students must register for courses through Registration and Records in order to be properly enrolled.

For information on late registration, schedule of courses, payment of fees, drop and add, auditing, Veterans Administration educational benefits, transcripts, change of address, and required identification, please see the section on undergraduate registration, page 26.

**Early Registration.** Matriculated (official degree-seeking) students who meet the eligibility requirements as defined in

## 2002–2003 Calendar for Graduate Degree Candidates

### Fall Semester 2002

**September 3, Tuesday.** New Graduate Student Orientation

**September 4, Wednesday.** Classes begin, Kingston campus

**September 27, Friday.** Deadline for December master's degree candidates and May doctoral degree candidates to submit thesis proposals \*

**October 4, Friday.** Final date for nominations for December graduation

**November 15, Friday.** Deadline for applications for Spring 2003, except for programs with earlier deadlines

Final date for December candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes along with the request for oral defense of thesis. NO EXTENSIONS OF TIME WILL BE GRANTED. *Theses must be submitted at least 20 calendar days prior to the date requested for oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See December 20 deadline and note at the end of the calendar on the next page regarding scheduling examinations during the winter intersession.*

**December 9, Monday.** Classes end. Programs of study due for students admitted for Fall 2002

**December 20, Friday.** Final date for December degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. NO EXTENSIONS OF TIME WILL BE GRANTED.

Final date for changes of grade, changes to programs of study, results of comprehensive exams, etc. for December degree candidates to be received in the Graduate School for certification for December graduation.

### Spring Semester 2003

**January 21, Tuesday.** Classes begin, Kingston

**February 3, Monday.** Final date for admissions applications from individuals seeking scholarships, fellowships or assistantships for 2003. Applications for financial aid received subsequent to this date cannot be assured of full consideration.

**February 7, Friday.** Final date for May master's degree candidates and August doctoral degree candidates to submit thesis proposals \*

**February 14, Friday.** Final date for nominations for May graduation

**March 3, Monday.** Final date for nominations from departments for fellowships and scholarships

**April 4, Friday.** Final date for May degree candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of thesis. NO EXTENSIONS OF TIME WILL BE GRANTED. *Theses*

*must be submitted at least 20 calendar days prior to the date requested for oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See the May deadline.*

**April 15, Tuesday.** Application deadline for summer 2003 admissions, except for programs with earlier deadlines

**April 25, Friday.** Deadline for August master's degree candidates and December doctoral degree candidates to submit thesis proposals \*

**May 2, Friday.** Final date for May degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. NO EXTENSIONS OF TIME WILL BE GRANTED.

Final date for changes of grade, changes to programs of study, results of comprehensive exams, etc. for May degree candidates to be received in the Graduate School for certification for May graduation.

**May 6, Tuesday.** Classes end. Programs of study due for students admitted in January 2003

**May 17, Saturday.** Commencement

**Also see the University Calendar on page 3 and Summer Session Calendar on the next page.**

*\* Thesis proposals "should be submitted before or during the first semester in which the student registers for research credits."*

the *Schedule of Courses* generally register in April and October for the following semester. The *Schedule of Courses* is available at Registration and Records and at [www.uri.edu](http://www.uri.edu).

**Summer Session.** Although some graduate-level courses are offered during the summer sessions, the University does not guarantee that any particular course will be offered. The availability of individual faculty members to supervise research or to participate in comprehensive examinations and in examinations in defense of theses or dissertations during the summer sessions varies from year to year. During the summer sessions, special arrangements must be made with both the Graduate School and the department for scheduling

comprehensive examinations and thesis or dissertation defenses. Students must be registered to be eligible to schedule these exams. Graduate students must make prior individual arrangements for taking directed studies or special problems courses.

### Time Limit and Continuous Registration.

Graduate students are expected to complete their course work and research within the five-year time limit prescribed for the master's degree and the seven-year time limit for the doctorate.

The time limit for a degree program may be extended by applying to the Graduate School for legitimate reasons such as military service or serious illness. This request requires the endorsement of

the student's graduate program director or department chairperson.

Graduate students must remain continuously enrolled—except for summer sessions, which are optional—until they have completed all requirements and have received their degree. Students who wish to maintain graduate status but do not require use of any University resources, are not registered for course work or research, and are not on a leave of absence approved by the department and the Graduate School must pay the continuous registration fee each semester until the degree has been awarded.

Students who are on a leave of absence or are on continuous registration do not have the privileges of consulting regularly

## 2003 Summer Sessions for Graduate Degree Candidates

**NOTE:** All courses taken by graduate students during summer sessions are subject to the same regulations regarding inclusion in programs of study and calculation of overall academic average, etc., as courses taken during the regular academic year. Students wishing to take directed studies or special problems courses during summer sessions must obtain individual approval for these courses from the Summer Session Office unless the specific offering is listed in the Summer Session Bulletin for that year. Students wishing to enroll for thesis or dissertation research during summer sessions must first determine that their major professors and/or members of their thesis or dissertation committees will be available and are willing to provide the necessary supervision. See also the important note at the end of this calendar regarding scheduling of examinations, including defense of theses, during summer session. See the Summer Session Bulletin available at the Summer Session Office.

### Session I: May 19–June 20

**May 19, Monday.** Classes begin

**June 9, Monday.** Final date for nominations for August graduation

**Week of June 16.** Classes end. Exams

### Session II: June 23–July 25

**June 23, Monday.** Classes begin

**July 7, Monday.** Final date for all August degree candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of the thesis. **NO EXTENSIONS OF TIME WILL BE GRANTED.** *Theses must be submitted at least 20 calendar days prior to the date requested for the oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See August 8 deadline.*

**July 15, Tuesday.** Deadline for Fall 2003 applications, except for programs with earlier deadlines

**Week of July 21.** Classes end. Exams

**August 8, Friday.** Final date for all August degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. **NO EXTENSIONS OF TIME WILL BE GRANTED.**

Final date for change of grades, changes to programs of study, results of comprehensive exams, etc. for August degree candidates to be received in the Graduate School for certification for August graduation.

**IMPORTANT:** Requests for scheduling examinations must be submitted to the Graduate School at least 20 calendar days prior to the date(s) requested. Theses and dissertations must be distributed to members of the examining committee at least 15 days prior to the defense date. Oral and written examinations, including qualifying and

comprehensive exams and defense of theses, are scheduled only at the convenience of the faculty members involved and depending on the availability of the candidate's program committee and additional qualified examiners. Such exams will not be scheduled during periods when URI is in recess. Students wishing to take any exams should first check as to the availability and convenience of the faculty members. Each faculty member must initial the request for scheduling the exam to indicate willingness to serve. The faculty should be consulted well in advance for exams being scheduled during the winter intersession and summer sessions. If they are not registered for course work or research during the summer sessions, students should register for one credit of research to defend theses and for continuous registration to take the other exams. Persons on continuous registration do not have the privilege of consulting regularly with professors on research or thesis preparation, nor of using URI's laboratory, computer, or other educational facilities (except for libraries).

with faculty on research or thesis preparation, nor of using laboratory, computer, or other educational facilities at URI. Students on continuous registration are not eligible for continuation of educational loan deferments based on student status.

A student who does not register for a semester, or obtain approval for a leave of absence, will be considered as having voluntarily withdrawn from the University. Students who are later permitted to re-enroll must pay the continuous registration fee for each semester in which they did not maintain graduate status.

**Full-Time and Part-Time Students.** Minimum full-time registration is nine credit hours during a regular semester and six credit hours during a summer session. Maximum registration of 15 credit hours during a regular semester and eight credits during each summer term may not be ex-

ceeded without prior written permission of the Graduate School, based on extraordinary circumstances. (Students on graduate teaching and research assistantships are limited to a maximum of 12 credits.) Credits in excess of 15 will be billed at the per-credit rate. Full-time registration is required of all international students and of all students holding fellowships, assistantships, full scholarships, and traineeships administered by the University.

**Credits Earned Off Campus.** Students wishing to register for credits to be counted toward a degree, who will be earning these credits through off-campus activities (such as research or independent study at a national laboratory), must obtain prior approval from the Graduate School and to have these activities listed as part of their programs of study.

**Intellectual Opportunity Plan (Pass-Fail Option).** To allow graduate students to venture into new areas of knowledge without fear that their scholastic average will suffer, the Graduate Council has approved the Intellectual Opportunity Plan. (Please note that courses below the 400 level are automatically excluded from the scholastic average.) To be eligible for this option, the student's major professor or advisor must certify that the course or courses are outside the student's major field of study, are not entrance deficiencies, and are not specific requirements of, but are relevant to, the student's program. A maximum of four credits may be taken by the master's degree candidate and a maximum of eight credits, including any taken as a master's candidate, by the doctoral candidate. Deadlines to participate in this plan are published in the *Schedule of Courses*.

# GRADUATE PROGRAM REQUIREMENTS



Each advanced degree awarded by the University requires as a minimum the successful completion of a specified number of approved credits of graduate study at the University and the passing of prescribed examinations. Credit hours for a master's or doctoral degree may include formal course work, independent study, research, preparation of a thesis or dissertation, and such other scholarly activities as are approved by the candidate's program committee and the Graduate School.

*It is the student's responsibility to know the calendar, regulations, and pertinent procedures of the Graduate School and to meet its standards and requirements.* These are set forth in this catalog, the *Graduate Student Manual*, the *Statement on Thesis Preparation*, and other publications, all of which are available to graduate students at the Graduate School Office and at [www.uri.edu/gsadmis](http://www.uri.edu/gsadmis). These documents are also available in some department offices. The student manual is available at the library and, for a fee, at commercial centers in Kingston.

These documents govern both master's and doctoral degree programs. The student manual gives detailed information on responsibilities of major professors and program committees, examination procedures, preparation of theses and dissertations, academic standards, and the Graduate Student Academic Appeals System.

The requirements immediately following are *general requirements* for all graduate students. *Specific requirements* for individual programs are itemized in the following section.

## Program of Study

The purpose of the program of study is to ensure that students, at an early stage in their graduate study, organize coherent, individualized plans for their course work and research activities. It is expected that the successful completion of students' programs of study along with collateral readings, research, etc., will enable them to demonstrate that they have achieved the high level of competence required of graduate students in their respective fields.

All degree candidates are required to prepare a program of study with the guidance of their major professors (for master's degree programs) or of their program committees (for doctoral programs) in accordance with the guidelines in the *Graduate Student Manual*. After the program has been approved by the major professor or by the program committee, the program of study is submitted for approval to the Graduate School.

## Course Numbering System

All regular graduate courses are numbered at the 500 and 600 levels. All 900-level courses are special graduate courses for which no graduate program credit is given. Courses numbered at the 400 level are for advanced undergraduates, but may, with approval and to a limited extent, be accepted toward meeting degree requirements at the master's level. For doctoral candidates who have completed the master's degree in the same field or one closely related, all program work must be at the 500 or 600 level.

## Scholastic Standing

Graduate work is evaluated by letter grades. All grades earned will remain on the student's record, and unless the courses were approved for no program credit prior to registration, all unaccept-

able grades will be included in calculating the student's scholastic average.

A grade of C+ (2.33) or lower in courses numbered at the 400 level is considered a failing grade. In such cases of failure the course must either be repeated, if it is a required course, or else replaced by another course approved by the candidate's program committee and the Graduate School. When students receive more than one grade of C+ (2.33) or lower in courses at the 400 level, their graduate status is subject to review by the Graduate School.

Grades of C- or lower are failing grades in courses at the 500 and 600 levels and require immediate review of the student's status. Students failing these courses must repeat them, if they are required courses, or else they must replace them with courses approved by the candidate's program committee and the Graduate School.

The grades S (satisfactory) and U (unsatisfactory) are used for courses of study involving research undertaken for the thesis or dissertation and for certain courses and seminars so designated. The letter I (incomplete) is used for excused unfinished work. Graduate students have one year to make arrangements with the instructor to remove the incomplete. If the grade of I (incomplete) is not removed within three calendar years, it will remain on the transcript but may not be used for program credit. Grades of S, U, I, and all grades in courses below the 400 level are not included in the academic average.

To qualify for continuation of degree candidate status and for graduation, a cumulative average of B (3.00 on a 4.00 scale) in all work is required, except for courses meeting entrance deficiencies or approved for no program credit prior to registration in the course. At any time when the academic record indicates unsatisfactory performance, the student's status is subject to review. A student who fails to maintain a satisfactory quality point average or to make acceptable progress toward the degree may be dismissed as a graduate student.

## Degree Requirements

**Master's Degree.** There are no major or minor area requirements for the master's degree. However, no degree can be awarded for the accumulation of credits without a planned and approved program of study. Courses for the degree are expected to be concentrated in the candidate's field of interest and related areas to produce a well-developed and coherent program.

The requirements listed here must be met within five years after the date the candidate is first enrolled as a graduate student at the University. With the submission of a written request for an extension and a schedule for completion, endorsed by the major professor and the graduate program director, a specific, time-limited extension may be approved by the Graduate School. The master's degree may be earned through full- or part-time study, or a combination of the two.

Some departments offer both a thesis and a nonthesis option, while others offer only one plan. Please refer to the "Graduate Programs" section for specific information on each program. General requirements for these options are as follows.

**Thesis Option.** The minimum requirements for a master's degree are: 1) the successful completion of 30 credits, including six to nine thesis research credits; 2) at the discretion of the department, the passing of written comprehensive examinations toward the end of the course work; 3) the submission of an acceptable thesis and the passing of an oral examination in defense of the thesis. Four copies of the thesis prepared in accordance with Graduate School requirements must be submitted to the Graduate School Office. A statement on the preparation of theses is available from that office.

**Nonthesis Option.** Depending on departmental requirements, some master's degrees may be earned without a thesis. The minimum requirements for a nonthesis master's degree program are: 1) the successful completion of a minimum of 30

credits; 2) completion of practicums, internships, or other experiences useful to the student's future professional career; 3) registration in one course that requires a substantial paper involving significant independent study; 4) the passing of a written comprehensive examination toward the end of the course work. Some departments may also require a final oral examination.

**Research Competency.** Although not normally required for the master's degree, a student's major professor or thesis committee may require proficiency in a foreign language, statistics, or computer science where appropriate for the subject chosen.

**Professional Degrees.** Students should refer to the specific program requirements for professional degrees and consult with the appropriate dean or director.

**Doctor of Philosophy Degree.** The Doctor of Philosophy degree must be completed within seven years of the date when the student first enrolled as a candidate.

The requirements for the doctoral degree are: 1) the completion of a minimum of 72 credits of graduate study beyond the baccalaureate degree, of which a minimum of 42 credits must be taken at the University of Rhode Island; 2) the passing of a qualifying examination; 3) if required by the department, proficiency in one or more foreign languages and/or in an approved research tool; 4) the passing of a comprehensive examination; 5) the completion of a satisfactory dissertation; 6) the passing of a final oral examination in defense of the dissertation; and 7) fulfillment of the residence requirement by taking a minimum of six credits per semester (specific graduate programs may require more) for at least two consecutive semesters after satisfying qualifying examination requirements. Residence is interpreted as attendance on campus or in the Alan Shawn Feinstein College of Continuing Education during a regularly scheduled semester. Full-time registration for both terms of a summer session counts as one semester of residence.

The department in which the student studies for the doctoral degree may or may not require a master's degree preliminary to, or as part of, the regular course of study.

*Qualifying Examination.* This examination is intended to assess a student's potential to perform satisfactorily at the doctoral level. A student without a master's degree who is accepted as a doctoral candidate is expected to take a qualifying examination, usually after 24–30 credits have been completed. A student who holds a master's degree in the same or a closely related field is normally not required to take the examination. If an examination is required, it will be stipulated at the time of admission.

*Research Competency.* Each department, in cooperation with the Graduate School, is authorized to formulate and to amend its own requirements and methods of testing for competency in research tools such as foreign language(s), computer science, or statistics. The department may, in turn, delegate this responsibility to the program committee for each individual doctoral candidate.

*Comprehensive Examination.* Each doctoral candidate will take comprehensive examinations at or near but not later than 12 months after completion of the formal courses stipulated in the program of study. The examination is designed to assess the student's intellectual capacity and adequacy of training for scholarly research.

The comprehensive examination consists of two parts: written and oral. The student, with the approval of his or her

program committee, applies to the Graduate School to take the examination. The oral examination committee includes the student's committee and two additional members of the graduate faculty appointed by the Graduate School. One of the additional members represents a field of study allied to that of the student's major. The candidate's major professor arranges for and chairs the examination. Unanimous approval by the examining committee is required for the passing of the comprehensive examination.

A candidate whose performance fails to receive unanimous approval may, with the committee's recommendation and the approval of the Graduate School, be permitted one re-examination in the part or parts failed, to be taken no sooner than ten weeks and no later than one year after the initial examinations.

*Final Oral Examination.* This examination is a defense of the dissertation and is open to all members of the faculty and, generally, to all students. The examination, usually a maximum of two hours, is conducted by an examining committee made up of the candidate's program committee and two additional graduate faculty members appointed by the Graduate School. One of the appointed members will be designated by the dean to chair the examination.

Unanimous approval of the examining committee is required for passing. If the candidate does not perform satisfactorily, the committee may recommend to the Graduate School that the candidate take one re-examination under stated conditions.

## Theses and Dissertations

For the oral defense, a sufficient number of completed copies of the thesis or dissertation, acceptable in form and substance to each member of the examining committee and the Graduate School, is required. At least 20 calendar days prior to the proposed defense, the copies must be submitted to the Graduate School for scheduling of the examination.

Following a successful defense, and after all changes and corrections have been made, four copies prepared in accordance with requirements of the Graduate School and the library must be submitted to the Graduate School Office. Doctoral candidates must submit an additional abstract, not exceeding 350 words.

Students are advised to consult the *Statement on Thesis Preparation and Instructions for Thesis Defense*, both available in the Graduate School Office (and at [www.uri.edu/gsadmis](http://www.uri.edu/gsadmis)), and the most recent edition of Kate L. Turabian's *A Manual for Writers of Term Papers, Theses, and Dissertations*, published by the University of Chicago Press.

# GRADUATE PROGRAMS

**T**his section describes the admission and degree requirements for the University's graduate programs, which are included within the general requirements set forth previously, and do not reduce those requirements.

The specific program requirements which follow are also minimum requirements; additional course credits may be required for candidates whose academic background is considered insufficient.

For example, in nonthesis master's degree programs, all students must take at least one course requiring a substantial paper involving significant independent study, and all Ph.D. candidates who do not hold an earned master's degree in a closely related field are required to take the Ph.D. qualifying examination even if it is not listed in the individual program requirements.

The standardized test scores admission requirement is also specific to each particular program. For programs requiring a standardized test, applications will not be reviewed until scores have been received. In all other cases, scores may be submitted if applicants believe the test results will enhance their application. However, the test results should be submitted as early as possible. If an application package is received before test results, the admission decision may be made without the scores.

Successful completion of any course of study at URI does not guarantee that the student will find either a specific kind or level of employment. Graduate students interested in the career opportunities related to their program of study are encouraged to discuss their interests with the appropriate department chair or director of graduate studies, the Graduate School's dean, or Career Services staff. Students uncertain about career choices are also invited to use the services offered by the Counseling Center.

The availability of these programs of study and areas of specialization, administrative locations, requirements, and titles, are subject to change without notice.

*For information on the background of your program's faculty, turn to the directory in the back or visit [www.uri.edu](http://www.uri.edu).*

## Accounting

M.S.  
401-874-2073

*Faculty:* Professor Higgins, *director of graduate studies.* Professors Hickox, Martin, Matoney, Schwarzbach, and Vangermeersch; Associate Professors Beckman, Boyle, and Hazera; Assistant Professor Graham.

## Master of Science

The Master of Science in accounting program is appropriate for students with a variety of educational backgrounds and professional interests. The program's objective is to provide an accounting and business foundation for the student with an undergraduate degree in an area other than accounting. These students graduate with a strong theoretical understanding of accounting along with the necessary technical background. They are equipped to perform exceedingly well in entry-level positions in accounting. An objective for students with undergraduate degrees in accounting is to provide a fifth year of conceptual, theoretical, and technical education in accounting, finance, management science, and other areas where the student and program director feel the student can gain the most toward achieving his or her educational objectives.

Applicants with a bachelor's degree in accounting from an accredited institution can complete the program of study in one year. Applicants with no prior education in



GRADUATE

business will need to spend two years in full-time study or longer if studying part-time. The course of study is divided into two parts. Part one is a common body of knowledge in business and accounting that is required for all students without a bachelor's degree in business. The student's undergraduate record is evaluated, and common body of knowledge courses are waived when a student has undergraduate equivalents. The second phase of the program allows the students to build on their accounting foundation and develop a high level of theoretical knowledge and a sound understanding of accounting principles and techniques. During the second part of the program the student selects an area in which to specialize. Two areas are available: 1) financial reporting and auditing, and 2) taxation.

*Admission requirements:* undergraduate quality point average of approximately B or above and a score at the 50th percentile or above on the GMAT examination are expected. The GMAT score and the undergraduate quality point average are not the sole criteria for admission. However, those with undergraduate quality point averages of less than B or with



lower than 50th percentile scores on the GMAT have a reduced probability of admission. Applicants for whom English is not the native language will be expected to demonstrate proficiency in written and oral communications (TOEFL score of 575 or above), or they may be required to correct deficiencies by taking selected courses for no program credit.

*Program requirements:* from 30 to 69 credits, depending on undergraduate program. A written comprehensive examination and a course requiring a major paper involving independent study are required in the nonthesis option.

All 600-level courses offered by the departments in the College of Business Administration are open to matriculated graduate students only.

## Applied Mathematical Sciences

(Interdepartmental)

Ph.D.

401-874-2701

This interdepartmental program is sponsored by the departments of Computer Science and Statistics, Industrial and Manufacturing Engineering, Management Information Systems, and Mathematics. It is administered by a coordinating committee selected from the graduate faculty.

*Coordinating Committee:* R.C. Hanumara (*chairperson*), David Freeman, Leonard Kahn, James Kowalski, John Montgomery, Seetharama Narasimhan, and Manbir Sodhi.

*Faculty:* Professors Fay Wolfe, Finizio, Grove, Hanumara, Jarrett, Kaskosz, Ladas, Lamagna, Lewis, Montgomery, Narasimhan, Pakula, Peckham, Sodhi, and Tufts; Associate Professors Baudet, Eaton, Kowalski, Kulenovic, Merino, Ravikumar, and Shao; Assistant Professors DiPippo, Gonzalez, Hervé, Kook, Thoma, and Wu; Adjunct Associate Professors Liu and Ting; Professors Emeriti Carney, Driver, Roxin, Suryanarayan, and Verma.

## Specializations

Applied mathematics, computer science, operations research, and statistics.

## Doctor of Philosophy

*Admission requirements:* GRE with advanced test in undergraduate field; bachelor's degree in computer science, engineering, mathematics, management science, physical sciences, statistics, or equivalent. With permission, GMAT may be substituted for GRE by applicants with business background. Applicants with entrance deficiencies may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree.

*Program requirements:* dissertation; 54 credits beyond the bachelor's degree including MTH 435, 436; two courses selected from MTH 462, 513, 515, 535, 545, 547, 548, 561, 641, CSC 542 and 544 (one of these courses must be either MTH 513 or 515); and three core courses in each of two of the following areas: applied mathematics, basic analysis, computational mathematics, computer science fundamentals and theory, applied computer science, operations research, and statistics. (A maximum of 30 credits may be granted for a master's degree in a closely related area. In this case, 400-level courses cannot be counted for program credit.) Comprehensive examination in core areas and reading proficiency in one foreign language. The oral comprehensive examination should include a faculty member from the Mathematics Department. The Ph.D. qualifying examination is required of students admitted without the master's degree. All Ph.D. candidates must register full-time for two consecutive semesters prior to the Ph.D. comprehensive examination.

Also see Mathematics, in this section.

## Applied Pharmaceutical Sciences

M.S., Ph.D. (Pharmaceutical Sciences)  
401-874-2754

*Faculty:* Professor Needham, *chairperson*. Professors Kislalioglu, Lausier, Luzzi, Rhodes, Rosenbaum, Temkin, and Zia; Research Professor Larrat; Associate Professor Andrade (Thomas M. Ryan/CVS Chair in Community Pharmacy); Associate Professor Lipson; Assistant Professor Akhalaghi.

## Specializations

Applied pharmaceutical sciences with emphasis on physical pharmacy, biopharmaceutics, pharmacokinetics, formulation and manufacturing of conventional and novel drug delivery systems, and cosmetic products, drug standards, regulatory affairs, pharmacoepidemiology and pharmacoconomics.

## Master of Science

*Admission requirements:* GRE and B.S. (pharmacy) or Pharm.D. or equivalent.

*Program requirements:* For the pharmaceuticals track—thesis; written comprehensive examination; STA 409, 411, or equivalent; CHM 431 or CHM 432 or BCH 435; APS 693, 694; nine credits of 500- or 600-level pharmaceuticals courses.

For the cosmetic science and technology track—thesis; written comprehensive examination; STA 409, 411, or equivalent; CHM 431 or CHM 432 or BCH 435 or CHE 542; APS 530, 531, 532, 693, 694; and ten credits of electives with one course selected from 500- or 600-level pharmaceuticals courses.

For the pharmacoepidemiology and pharmacoconomics track—thesis; written comprehensive examination; STA 409 or 411 or equivalent; APS 599, 651, 652, 693, 694.

## Doctor of Philosophy (Pharmaceutical Sciences)

*Admission requirements:* same as for master's degree. Written and oral qualifying examinations are required of all candidates.



*Program requirements:* for pharmaceutical formulations and regulatory affairs—dissertation; M.S. core requirements plus APS 693, 694, IME 533; and written and oral comprehensive examinations. In addition, for the pharmaceutical formulation track—CHE 530; six credits from CHM 512, MIC 533 and 552, NFS 502, APS 680, and CHM 511; and ten additional credits of 500- or 600-level pharmaceuticals courses. For the regulatory affairs track—STA 409, 411, APS 621, 670, 660, 680, 540, STA 535, and either APS 622 or 631. Additional credits from the following to make a total of 48 course credits: APS 535, 550, 622, 623, 631, 633, 640X, 651, 652, PEX 564, MIC 533, MIC 552, MGT 630, MKT 601, CHM 512, PHP 540. Twenty-four doctoral dissertation credits are required.

For the pharmacoepidemiology and pharmacoeconomics track—27 credits of core courses (APS 540, 550X, 580, 640X, 651, 652, 680, 693, 694, STA 412, PSY 533 or STA 541); nine credits of concentration courses; 12 credits of electives; 24 credits of APS 699, qualifying examination, oral and written comprehensive examinations, and dissertation. Suggested concentrations include the improvement in quality of pharmaceutical delivery, pharmacoepidemiology, epidemiology, statistical analysis, nursing research, medical effectiveness, health care quality management, pharmacoeconomics, managed care pharmacy, and health care administration. Tutorials may be arranged in areas of special interest to the student; students are expected to attend and participate in the departmental seminar (APS 693, 694) during their entire tenure in the Ph.D. program, for a maximum of three credits assigned to the core credit requirement.

## Audiology

See Speech-Language Pathology and Audiology.

## Biochemistry

See Cell and Molecular Biology.

## Biological Sciences

M.S., Ph.D. (Biological Sciences)  
401-874-2372

*Faculty:* Professor Heppner, *chairperson*; Assistant Professor Forrester, *director of graduate studies*. Professors Bibb, Bullock, Cobb, Costantino, Goldsmith, Kass-Simon, Killingbeck, Koske, and Twombly; Associate Professors Norris and A. Roberts; Assistant Professors Carrington, Irvine, and Wilga; Adjunct Professors Sebens, Shirley, and Smith; Adjunct Associate Professors Gemma, Hammen-Winn, Katz, and Thursby; Adjunct Assistant Professors Cromarty and E. Roberts; Professors Emeriti Goos, Harlin, Hyland, and Shoop; Associate Professor Emeritus Krueger; Research Professor Hill.

### Specializations

*Ecology, systematics, and behavior:* population and community ecology, recruitment and fisheries biology, biomechanics of aquatic plants and animals, functional morphology of marine vertebrates and invertebrates, systematics of marine invertebrates, especially mollusca, ecology and physiology of plant nutrient resorption, role of mycorrhizal fungi in structuring plant communities and plant growth, invertebrate behavior and neuroethology, avian behavior.

*Molecular, cell and developmental biology:* role of endogenous and environmental signals in the regulation of plant cell expansion and differentiation, construction of molecular linkage maps, genetic analysis of quantitative traits, plant-microbe interactions, signal transduction in plants.

*Physiology:* comparative physiology and neurobiology of marine invertebrates; physiology of nutrient resorption in plants; plant stress physiology; physiology of mycorrhizal fungi.

## Master of Science

*Admission requirements:* GRE and bachelor's degree with major in the sciences. Candidates lacking undergraduate courses in organic chemistry, physics, mathematics through introductory calculus, and fundamental courses in biological sciences may be required to make up deficiencies without graduate credit. Applicants are normally admitted for the fall semester only. The completed application package must be received by April 15. For consideration for financial aid, the application package should be received by February 1.

*Program requirements:* thesis or nonthesis options.

The thesis option requires a minimum of 30 credits, six to nine of which may be earned through thesis research (BIO 599). BIO 581, 582 must be taken each year; thesis defense also required.

The nonthesis option is designed for students in the health sciences planning to enter a professional school upon completion of the M.S. degree. A minimum of 30 credits of course work, a written comprehensive examination, and a substantial project (including a written paper) are required. Twelve credits in biology are chosen from the following: BIO 437, 442, 444, 453, 541, 545, 546, 549, 550, 572, 573, 668, or other approved upper-level courses, three credits in advanced biochemistry (BCH 435, 481, or 581) or physical chemistry (CHM 431), three credits in statistics, at or above the 400 level. Seven elective credits may be chosen from recommended upper-level biology courses including MIC 431, 414, 415, 416, 503, 505, 521, 533, and AVS 472. A maximum of three credits is to be chosen from the following courses or their equivalent: BIO 691, 692 (Biological Problems), BIO 581, 582 must be taken each year.

## Doctor of Philosophy (Biological Sciences)

*Admission requirements:* same as for master's degree; master's degree not required. Applicants are expected, but not

required, to have a reading knowledge of two languages in addition to their native language. Applicants are normally admitted for the fall semester only. The completed application package must be received by April 15. For consideration for financial aid, the application package should be received by February 1.

*Program requirements:* comprehensive examination and dissertation defense; qualifying examination required for all candidates except those having an M.S. degree; a minimum of 72 credits, 18–28 of which can be earned through dissertation research (BIO 699). Thirty transfer credits will be accepted for students who have received a M.S. degree. Registration in BIO 581, 582 required each year.

## Business Administration

M.B.A., Ph.D.  
401-874-5000

*Faculty:* Professor Chen, director of Ph.D. program.

Accounting: Professors Higgins, Martin, Matoney, Schwarzbach, and Vangermeersch; Associate Professors Beckman, Boyle, and Hazera; Assistant Professor Graham.

Business Law: Professors Hickox and Laviano; Associate Professor Dunn.

Finance and Insurance: Associate Professors Dash, Lee, and Oppenheimer; Assistant Professors Lin, Michayluk, Wang, Sabherwal, and Yu.

Management: Professors Beauvais, Comerford, Cooper, deLodzia, Overton, Scholl, and Sink; Associate Professors Dugal and Randall; Assistant Professor Lehrer.

Management Information Systems: Professors Armstrong, Budnick, Chen, Humphrey, Jarrett, Kim, Koza, Mangiameli, Mojena, Narasimhan, and Westin; Associate Professor Ageloff; Assistant Professor Lloyd.

Marketing: Professors Della Bitta, N. Dholakia, R. Dholakia, Johnson, Mazze (Dean and the Alfred J. Verrecchia-Hasbro Inc. Leadership Chair in Business), and Venkatesan; Associate Professors Rosen and Surprenant; Assistant Professors Sheinin and Varki.

## Specializations

*For the M.B.A.:* finance, general management, international management, management science and information systems, and marketing.

*For the Ph.D.:* finance and insurance, management, management science, and marketing.

## General Information

In addition to the University's Office of Information Services, business students have access to four other computer facilities: the Dennis W. Callaghan Microcomputer Laboratory, the Computer-Integrated Manufacturing Laboratory, the college's general computer facility, and a smaller computer laboratory at the Alan Shawn Feinstein College of Continuing Education (in Providence). These facilities are available to both daytime and evening students six days a week.

## Master of Business Administration

The Master of Business Administration (M.B.A.) program prepares students for leadership positions in business, government, and nonprofit organizations. The faculty seeks to develop a global perspective while stressing the ethical and environmental responsibilities inherent in all management activities. The program is offered on the Kingston Campus for full-time students, and in the evening through the Alan Shawn Feinstein College of Continuing Education (located in Providence) for part-time students. Full-time candidates may begin the program in the fall semester only and will complete the program in one calendar year. Part-time candidates may begin the program in the fall or spring semester.

In addition, an M.B.A. for Executives may be completed in 18 months, beginning in August, by participating in a program that meets every other Friday and Saturday at the W. Alton Jones Campus in West Greenwich. A group of 20–25 experienced managers (7–10 years of management experience) follows a curriculum that emphasizes human relations, organizational behavior, financial analysis, and other areas useful to the effective manager. Applicants should specify the M.B.A. program (full-time, part-time, executive) they wish to enroll in on the application.

*Admission requirements:* Graduate Management Admissions Test (GMAT), a statement of purpose, a resumé, two letters of recommendation, and transcripts of all previous undergraduate or postbaccalaureate work are required. Work experience is valued. Applicants for whom English is not the native language are required to score 233 or above on the TOEFL. The GMAT score and undergraduate quality point average are not the sole criteria for admission. However, those with undergraduate quality point averages of less than B or those with less than 50th percentile scores on the GMAT have a low probability of admission. Applications from well-qualified individuals who can contribute to the cultural and ethnic diversity of the College of Business Administration and the University are welcome.

*Program requirements:* The MBA program curriculum has been updated to maintain a program that is current and relevant in the workplace.

The part-time MBA program requires a minimum of 36 credits and a maximum of 53 credits. First, students are required to take the following nine courses: BAC 500, 520, ECN 590, MBA 500, 502, 503, 504, 505, 590. Waiver exams are available for BAC 500, 520, and MBA 500. The other courses can be waived with permission of the program director based on successful completion of recent equivalent college-level courses at an AACSB accredited institution. Students then must select five out

of the following seven courses: MBA 510, 520, 530, 540, 550, 560, and 570. Finally, students are required to take four electives to complete their program of study.

The one-year full-time M.B.A. program is a nonthesis program consisting of a 48-credit integrated curriculum. It contains much of the same course work as the part-time program, but requires students to show proficiency in computer and math skills before entering the program. This may be done through prior academic performance, waiver exams, or summer graduate course work. Students start in the fall only and continue through July by completing two evening courses and participating in an internship or elective course work.

The Executive M.B.A. program is a nonthesis program consisting of a 48-credit integrated curriculum. Students are required to show proficiency in computer and math skills before entering the program through prior academic performance, waiver exams, or summer graduate course work. Material is presented in three phases consisting of a number of integrated modules. Phase I consists of leadership and communication skills, economics, quantitative analysis, statistics, and decision making. Phase II covers financial and managerial accounting, corporate finance, operations management, marketing, information systems, entrepreneurship, and business law. A week-long international trip starts off Phase III, which is comprised of the development and analysis of competitive strategy, the management of organizational change and transformation, and global competitiveness. There is a heavy emphasis on case analysis and team-based performance.

### Doctor of Philosophy

The Ph.D. program is small and highly selective. Admission is competitive and based on academic merit, research capabilities, and the match of research interests between the applicant and faculty in the indicated area of specialization.

*Admission requirements:* GMAT or GRE, and a master's degree. Applicants with diverse academic backgrounds are encouraged to apply.

Applicants are admitted for the fall semester only. Due to the selectivity of the programs, new admissions to the doctoral program must be limited to a small number each year. Since applicants are evaluated for each of the four specialization areas independently, all applicants must specify a single area of specialization on the application form. Completed application package must be received by February 15; applications received after that date and before May 1 are reviewed on a space-available basis until the programs are full, and are not guaranteed a full review.

Applicants for whom English is not the native language will be expected to score 233 or above on the TOEFL. The GMAT and GRE scores and master's quality point average are not the sole criteria for admission. However, those with master's quality point averages of less than 3.20 on a 4.00 point scale or those who score lower than the 60th percentile on the GMAT or GRE have a low probability of admission. The average master's quality point average for current doctoral candidates is 3.60, and their GMAT scores average in the top 20th percentile.

*Program requirements:* during the qualifying phase of the program, entering doctoral students must take four written qualifying examinations. These written examinations are scheduled in accounting, financial economics, behavioral science, and decision science. One or more of these examinations may be waived for a student on the basis of course work taken in the last five years.

The advanced study phase includes a minimum of 32 credit hours of advanced course work in the area of specialization, in supporting and connected areas, and in research methodology and techniques. Course work during this phase may include seminars, directed studies, research projects, and field work deemed appropriate for the student's area of specialization. All Ph.D. candidates must include BUS 601

and 602 in their programs of study. Each student is required to write at least three major papers of publishable quality. This phase culminates in a written comprehensive examination covering the student's area of specialization as well as research methods and statistics.

After passing the comprehensive examination, doctoral candidates enter the dissertation research phase and engage in significant research under the supervision of their major professor and the doctoral committee. Doctoral dissertation research is expected to make a major contribution to the state of knowledge in the candidate's field. The dissertation defense is a final oral examination administered according to procedures established by the Graduate School.

The Management Information Systems area is also a sponsor of the Ph.D. program in applied mathematical sciences.

### Cell and Molecular Biology

M.S., Ph.D. (Biological Sciences)  
401-874-2205

*Faculty:* Professor Sperry, *chairperson and director of graduate studies.* Professors Bradley, Cohen, Goldsmith, Hufnagel, Laux, and Nelson; Associate Professors Chandlee, Martin, Mottinger, and Norris; Assistant Professor Sun; Adjunct Professor Kausch; Adjunct Assistant Professor Mehta; Professors Emeriti Cabelli, Hartman, Traxler, Tremblay, and Wood; Associate Professor Emeritus Krul.

### Specializations

*Cell biology, cellular development, ultrastructure:* ciliogenesis in protozoa, electron microscopy, ultrastructure of electrically conducting systems, cell culture, cellular immunity.

*Medical microbiology:* pathogenesis, immunology, mycology, virology.

*Microbial ecology, industrial microbiology, pollution:* marine and freshwater microbial ecology, biodeterioration, sanitary bacteriology, coliform ecology.

*Microbial genetics, physiology, molecular microbiology:* genetic and molecular relation of cellular morphogenesis and development, bacterial colonization of the mammalian intestine, messenger RNA metabolism in procaryotes and eucaryotes, virus multiplication, control of transport and metabolism, mechanisms of survival, membrane structure.

### Master of Science

*Admission requirements:* GRE and a bachelor's degree with a program of studies that included at least two semesters each of biological sciences, general chemistry, organic chemistry, physics, and mathematics including at least one semester of calculus. Applicants may be admitted with deficiencies, to be corrected with appropriate course work (to be excluded from program credit).

*Program requirements:* core courses (all tracks)—MIC 413/415 (5), BCH 593E, 581, 582, BCH/MIC 695. Biochemistry track—core courses plus nine credits chosen from BCH 542, 584, BMS 641, BCH (BMS) 642, BMS 530, 535, 572, BCH 521, 523/524 (max three credits for M.S. and six credits for Ph.D.). Microbiology track—core courses plus MIC 414/416 (5), 500–600-level elective, 695. Molecular genetics track—core courses plus BCH 437, MIC 695, at least two credits of a free elective, MIC 552 or BIO 573.

### Doctor of Philosophy (Biological Sciences)

*Admission requirements:* same as for master's degree. A course in physical chemistry is also recommended.

*Program requirements:* same as for master's degree, plus all candidates must pass the Ph.D. qualifying exam. Of the credits earned beyond the master's degree, 18 should be in course work. Prior to the last semester, the candidate must pass a written and oral Ph.D., comprehensive examination in the major areas of his or her program.

## Chemical Engineering

M.S., Ph.D.  
401-874-2655

*Faculty:* Professor Brown, *chairperson*; Associate Professor Rivero-Hudec, *director of graduate studies*. Professors Barnett, Bose, Gregory, Knickle, and Rose; Associate Professor Gray; Associate Research Professor Crisman; Professor Emeritus Rockett.

### Specializations

*Biochemical engineering:* reactors, purification methods, degradation, and chemical production.

*Energy engineering:* analysis of energy systems, multiphase flow and water conservation.

*Environmental engineering:* separation methods, heavy metal removal, solvent recovery, hazardous waste minimization, and desalination.

*Materials engineering:* corrosion and erosion, electronic materials processing, ceramic processing, polymer films, conducting polymers and thin film materials and sensors.

*Polymer process engineering:* thermo-physical properties of polymers, polymer process modeling and control.

*Process simulation:* process design, optimization and analysis; process control; numerical methods.

*Transport phenomena:* surface, interfacial and colloidal phenomena, flow through porous media, multiphase fluid mechanics, phase equilibria, and diffusion through polymers.

*Unit operations:* mixing, vacuum processes, chromatography, electrodialysis, ultrafiltration and microfiltration.

### Master of Science

*Admission requirements:* bachelor's degree in chemical engineering; candidates from other engineering fields or from mathematics, biology, chemistry, or physics may be accepted into the program with possible addition of prerequisite courses.

*Program requirements:* 30 credits including CHE 501, 502, 503, 513, 537, 541, 599 (6–12 credits). For 12 thesis

credits, no special problems or graduate seminar credit is permitted, 18–24 credits of course work. Nonthesis option for part-time students, with permission of the chairperson; master's examination and comprehensive report with oral examination. Attendance in CHE 501 or 502 is required every semester for all on-campus students.

### Doctor of Philosophy

*Admission requirements:* M.S. degree in engineering.

*Program requirements:* Candidate's program will be determined in consultation with his or her committee and will be based on his or her background and career goals, but must include CHE 501, 502, 614, 641, 699 (24 credits). Twelve credits of course work in addition to the required courses would be needed. A comprehensive examination and an acceptable dissertation are required to complete the program, along with CHE 501, 502.

## Chemistry

M.S., Ph.D.  
401-874-2318

*Faculty:* Professor Euler, *chairperson*. Professors C. Brown, Dain, Fasching, Fisher, Freeman, Kirschenbaum, Nelson, Rosen, Shimizu, Vittimberga, and Yang; Associate Professors Oxley and Smith; Assistant Professor Lucht; Professors Emeriti Abell, P. Brown, Cheer, Cruickshank, Goodman, MacKenzie, Rosie, and Traficante.

### Specializations

*Analytical chemistry:* electrochemistry, vibrational spectroscopy, separations science, laser spectroscopy, bioanalyses.

*Biological chemistry:* anticancer/antiviral agents, enzyme inhibition, neurochemistry, oxidative stress, macromolecular recognition, sphingamines.

*Inorganic chemistry:* metal oxidation state, solution kinetics, low-dimensional conductors, coordination complexes, light scattering, polymeric materials.

*Organic chemistry:* reaction mechanisms, synthesis, electron transfer, structural analysis, nucleic acid chemistry, heterocycles, polymerization, organometallics.

*Physical chemistry:* theoretical chemistry, molecular spectroscopy, polymer arrays, statistical mechanics, smart materials.

### Master of Science

*Admission requirements:* Preference is given to candidates with undergraduate majors in chemistry or chemical engineering with mathematics through calculus. GRE only for graduates of non-U.S. universities, with advanced test strongly recommended.

*Program requirements:* placement examination to determine specific program requirements and successful completion of master's qualifying examinations. For thesis option (31 credits), 12 credits of graduate core courses in at least three of the four areas of chemistry; one additional graduate-level course in chemistry; CHM 642 or 643; and thesis. For nonthesis option (30 credits), 18 credits of graduate core courses; six additional credits of graduate course work; CHM 642 (1 credit); CHM 551, 552 (minimum 5 credits); and a written comprehensive examination.

The 30-credit nonthesis option is also offered on-site at Pfizer, Inc. (Groton, Conn.)—18 credits of graduate core courses; six additional credits of graduate course work; CHM 642 (1 credit, taken in Kingston), CHM 551 (minimum 5 credits); and a written take-home comprehensive exam.

### Doctor of Philosophy

*Admission requirements:* same as for master's degree.

*Program requirements:* successful completion of qualifying examination; 15 credits of graduate core courses; one additional graduate-level course in chemistry; and CHM 642–644 (3 credits). Comprehensive examination and dissertation.

## Civil and Environmental Engineering

M.S., Ph.D.  
401-874-2692

*Faculty:* Professor Tsiatas, *chairperson*; Associate Professor Thiem, *director of graduate studies*. Professors Kovacs, Lee, Silva, Urish, and Distinguished Professor R. Wright; Associate Professors Karamanlidis, Marcus, and Veyera; Assistant Professors Baxter and Hunter; Adjunct Professors Harr and T. Wright; Adjunct Associate Professor Apostol; Adjunct Assistant Professor Badorek; Professor Emeritus Poon.

### Specializations

*Environmental engineering:* water supply and treatment facilities, municipal and industrial waste treatment, flocculation and coagulation of wastes, solid waste and hazardous waste management, modeling of environmental systems, groundwater pollution, groundwater exploration, coastal groundwater, nonpoint source pollution, stormwater management, river and estuary hydrology, hydraulics and water quality.

*Geotechnical engineering:* geoaoustic modeling and properties of marine sediments, sediment sampling, in-situ testing, deep-sea sedimentary processes, sediment transport, creep processes, environmental geotechnology, dredge material disposal, experimental geomechanics, soil-structure interaction, constitutive modeling of geological materials, particulate mechanics, applications of nonlinear finite element and discrete element methods to geomechanics problems, earthquake engineering, wave propagation in granular media, dynamic soil properties, liquefaction, geosynthetics.

*Structural engineering:* matrix and finite element analysis, computer and numerical methods, deterministic and stochastic structural dynamics, earthquakes, vibration control of buildings, system identification, structural reliability, hysteretic structures,

fatigue, design of steel and concrete structures, marine structures, structural stability, thin-walled structures, coastal structures, vibration control, soil-structure interaction, condition assessment and rehabilitation of bridges.

*Transportation engineering:* properties of pavement materials, pavement theory and design, pavement management system, highway location, and geometric design. For master's level only: traffic operation and control, transportation cost, transportation supply and demand analysis, and transportation system analysis.

### Master of Science

*Admission requirements:* bachelor's degree in civil or environmental engineering. Candidates in other engineering fields or in mathematics, biology, chemistry, or physics may be accepted with the possibility of additional undergraduate prerequisite courses being required.

*Program requirements:* thesis or nonthesis option. Thirty credits plus CVE 601, 602 except for part-time students. For the thesis option, the thesis counts as six to nine of the required credits. The nonthesis option requires a comprehensive technical report and a written comprehensive exam.

### Doctor of Philosophy

*Admission requirements:* master's degree in civil or environmental engineering or a related field.

*Program requirements:* a minimum of 42 credits plus CVE 601 and 602 beyond the M.S. degree. Students take between 18 and 24 dissertation credits, including the two-course minor outside of the candidate's area of specialization, where required by the candidate's committee; a comprehensive examination; and a dissertation. Although there is no formal departmental language requirement, the committee may require proficiency with a research tool or in a foreign language.

## Clinical Laboratory Science

M.S.  
401-874-2315

*Faculty:* Professor Sperry, *chairperson*; Adjunct Professor Paquette, *director of graduate studies*. Professors Boulmetis, Goldsmith, and Laux; Associate Professors Norris and Rivero-Hudec; Adjunct Professors Hutchinson, Mello, and Sheff; Adjunct Associate Professors Barker, Canick, Opal, and Tantravahi; Adjunct Assistant Professors Aucoin, Balkovic, Blazek-D'Arezzo, Heelan, Kenney, LaFazia, Mayer, Meglio, and Metheny; Professor Emeritus Campbell.

### Specializations

Major specializations in biotechnology, clinical chemistry, cytopathology, clinical microbiology, hematology, immunohematology; minor specializations in adult education and management.

### Master of Science

*Admission requirements:* GRE recommended; bachelor's degree in clinical laboratory sciences, life sciences, physical sciences, or health sciences (for cytopathology, must include 20 semester hours of biological science [anatomy and physiology are recommended] and eight semester hours of chemistry); certification, or certification eligibility, by a nationally recognized certifying agency, or a minimum of one year's postbaccalaureate laboratory experience. One course in statistics is required. Applicants with deficiencies in background courses may be required to complete appropriate course work without graduate credit. Acceptance into the cytopathology specialization is contingent upon acceptance into the Rhode Island School of Cytotechnology, sponsored by Our Lady of Fatima and Women and Infants hospitals.

*Program requirements:* BCH 551, EDC 505, 582, 583 or 584 (or MIC 534 or MTC 591 for cytopathology, MIC 534 for biotechnology), MTC 510, 512, 513, and nine to 24 credits in the area of specialization (BIO 437, CHE 574 and MTC/APS 571 for

biotechnology; MIC 534, BIO 437 and MTC 502 for clinical chemistry; MIC 534, BIO 437 and MTC 501 for clinical microbiology; MIC 534, MTC 520 and 530 for hematology and immunohematology; MTC 561 through 566 for cytopathology). The remainder of courses are to be selected from education, management, or other specializations for a total of 33 credits (39 credits for cytopathology). Comprehensive written examination. Major research paper.

The following are recommended for a minor specialization in health care management: APS 651, 652, and 680. The following are recommended for a minor specialization in adult education: four courses selected from EDC 505, 529, 582, 583, and 584.

## Communication Studies

M.A.  
401-874-2552

*Faculty:* Professor Wood, *chairperson*; Professor Ketrow, *director of graduate studies*. Professors Brownell, Chen, Devlin, Doody, Grubman-Black, Mundorf, Silvia, and Swift; Associate Professors Leatham, Quainoo, and Salazar; Assistant Professors Derbyshire, McClure, and Reed; Professor Emeritus Anderson.

### Specializations

Specializations are offered in applied communication, interpersonal communication, media studies, organizational communication, political communication, and public discourse. In consultation with advisors, students prepare for careers in public and private industry, government, or academic areas. Students are encouraged to develop their course plans to foster their evolving career needs. Thus, one might advance specific interests and competencies in areas such as communication technology, conflict management, political media, organizational communication consulting, or public relations. Individual specialties can be developed within each of the specialization areas.

Courses are generally offered in late afternoon or evening in Providence and Kingston for students' convenience; full- and part-time programs of study are available.

### Master of Arts

*Admission requirements:* generally, GRE and bachelor's degree with undergraduate credit in communication studies. The GRE writing assessment is recommended. Students from other academic backgrounds are encouraged to apply and may be admitted with the permission of the director of graduate studies, although some basic courses may have to be taken for no program credit.

*Program requirements:* an approved program will include a minimum of 30 credits for either the thesis or nonthesis option. COM 501 and COM 502 are required for all students, preferably completed prior to seminar or other course work. For the thesis option, a thesis based on independent research and its oral defense, and 24 course credits. For the nonthesis option (admission with approval of the director of graduate studies), one course including a substantial paper requiring significant independent research, and a written comprehensive examination. Up to 12 credits of free electives, including independent study in COM 591 and/or 592, subject to approval by the director of graduate studies in communication are permitted. No more than six of those elective credits may be in independent studies. Students taking six credits per semester, plus one summer, may complete their studies in two years.

## Community Planning

M.C.P., M.C.P.-J.D. (with RWU)  
401-874-2248/2249

*Faculty:* Professor Atash, *chairperson*. Professors Feld and Simeoni; Associate Professors Feldman, Foster, Gordon, Jensen, and Krause; Assistant Professor Thompson; Adjunct Professors Hamilton and Thomas; Adjunct Associate Professors Abedon,

Deller, Payne, Ruggiero, Shamon, and Westcott; Adjunct Assistant Professors Bryant, Flynn, Manheim, Motte, Parella, Schatz, Tigan, and Winsor; Professor Emeritus Kumekawa.

## Specializations

The graduate curriculum educates and trains planners for professional positions in community planning and development agencies in both the public and the private sectors. A core of study in theory and substantive methods relating to urban or urbanizing communities is required. In addition, four specializations are offered: *environmental and land use planning*, *urban design and physical planning*, *housing and community development*, and *social policy planning*.

The specialization in *environmental and land use planning* focuses both on planning of the built environment and on concern for the impact of development on the natural environment. The specialization in *urban design and physical planning* emphasizes the significant role urban (community) design plays in the overall planning process and the relation of that design to other functional areas in comprehensive planning, i.e., land use, transportation, and economic development. The specialization in *housing and community development* integrates economic, social, and political theories of development with methods and policies to improve living conditions in communities through housing and economic development. The *social policy planning* specialization emphasizes the elements of social structure and social characteristics that form the imperatives for policy in city planning.

## Master of Community Planning

**Admission requirements:** GRE; the undergraduate background areas preferred are the social sciences, architecture, landscape architecture, natural resources, engineering, and geography. Undergraduate courses in computer science and microeconomics are recommended but not required for admission to the program. The degree is accredited by the Planning

Accreditation Board and is offered through the New England Regional Program.

**Program requirements:** the 50-credit program consists of 32 credits of required core courses, six credits of CPL 589 or 599, and 12 credits of courses in the specialization area. (Read on for information on the 31-credit program for eligible URI landscape architecture undergraduates.)

Students must select a specialization area by the end of their first semester of study, and must complete a four-course sequence in the area of specialization and a comprehensive examination covering the core and the area of specialization. CPL 510, 512, 522, 523, 526, and 631 are required. CPL 501, 511, and 525 will also be required unless proficiency has been demonstrated by previous course work. A summer internship or equivalent experience is required. The following courses are required in the specialization areas. *Environmental and land use planning:* CPL 545 and three courses from CPL 537, 538, 539, 549, REN 534, MAF 521, and NRS 410. *Urban design and physical planning:* CPL 530 and three courses from CPL 516, 536, 538, 545, 546, 555, and CVE 442 and 446. *Housing and community development:* CPL 624 and three courses from CPL 540, 541, 542, 554, 555, and 625. *Social policy planning:* CPL 624 and three courses from CPL 543, 625, LRS 546, and ECN 404. Other acceptable courses may be substituted for the electives where appropriate. Students normally take 13–15 credits per semester to complete degree requirements in two years. Some community planning courses are offered at URI's Providence Campus to add the urban experience to the curriculum.

## Dual-Degree Program: Master of Community Planning (URI) and Juris Doctorate (Roger Williams University of Law)

A cooperative dual-degree program offered at URI and Roger Williams School of Law permits joint enrollment leading to an M.C.P. and J.D. The integrated program of the two degrees allows a student to complete both programs in four years in-

stead of the five required if both degrees were pursued separately.

**Admission requirements:** GRE and other requirements listed for URI Graduate School and requirements listed for Roger Williams School of Law. Applicant must apply and be accepted to both programs and must indicate the M.C.P./J.D. as the field of specialization.

**Program requirements:** each student must complete the core requirements of each program. Roger Williams' School of Law will accept 15 M.C.P. credits as transfers toward the total of 90 required credit hours in law. URI's Department of Community Planning will accept 10 law credits as transfers toward the total of 50 credits. A total of 115 credits is required to complete the dual-degree program. Each student must file separate programs of study and pass the exit requirements of each degree.

## Accelerated Degree for Landscape Architecture Undergraduates at URI

URI undergraduate landscape architecture majors interested in an accelerated program to achieve the M.C.P. degree may follow a special sequence of graduate-level course work during their junior and senior years, including CPL 410, 511, 525, 530, 538, and 545. If eligible, following award of the B.L.A., students then complete a 31-semester-hour master's degree, specializing in urban design and physical planning, in one year of full-time graduate study (the regular master's degree is 50 semester-hours). This option requires careful sequencing of course work, and is not available to students from other undergraduate institutions or to students electing part-time study prior to admission.

**Admission requirements:** GRE; URI senior standing in landscape architecture with all major requirements completed; a 3.00 cumulative grade point average; and two letters of recommendation from URI community planning and landscape architecture faculty.

**Program requirements:** For students who have taken the specified 19 credits of community planning course work in the junior and senior years to complete the B.L.A., 31

credits of course work in the fifth year in the graduate program. Internship requirements will be fulfilled during the summer prior to entering the graduate program. Specific course requirements are as stated in the regular master's program except CPL 410, 511 and 525 will be applied toward the master's required core courses; CPL 410 will satisfy the CPL 501 course requirement; and CPL 530, 538 and 545 will be applied toward the specialization courses.

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## Computer Science

M.S.  
401-874-2701

*Faculty:* Associate Professor Kowalski, *chairperson*; Associate Professor Ravikumar, *director of graduate studies*. Professors Carrano and Lamagna; Associate Professors Baudet, Fay-Wolfe, and Peckham; Assistant Professor DiPippo; Adjunct Associate Professors Strauss; Adjunct Assistant Professors Encarnação, Hamel, and Ravenscroft.

### Specializations

Analysis of algorithms, artificial intelligence, computer architecture, parallel computing, theory of computation, databases, operating systems, distributed computing, real time systems, expert systems, computer graphics, software engineering, computer algebra, VLSI systems, numerical analysis, statistical computation, simulation, computer-aided education.

### Master of Science

*Admission requirements:* bachelor's degree in computer science or a closely related field. Applicants with a bachelor's degree in an unrelated field will be considered provided they have completed course work covering the material in CSC 211, 212, 301, 305, 340 and MTH 141, 142, 215, 243. Students may be admitted who have completed only a part of the above course work but they will be required to complete the deficiencies before taking more advanced classes.

The GRE General test is required. A subject test in computer science or a related field is not required but may be considered by the admissions committee.

*Program requirements:* The M.S. curriculum in computer science has three tracks: thesis, nonthesis, and applied nonthesis. For the purpose of describing degree requirements, computer science courses are organized into the following groups:

Algorithms: CSC 440, 541, 542

Programming Languages: CSC 402, 501, 502

Computer Architecture: CSC 411, 415, 511

Computer Systems: CSC 412, 512, 517, 519

Theory of Computation: CSC 445, 544

Software Design: CSC 505, 509

Applications: CSC 406, 436, 481, 536, 550, 581

A program of study can include at most three courses at the 400-level. Students who have undergraduate credits for a particular 400-level course (or equivalent) cannot repeat the course for graduate credit.

Program requirements for thesis option: 1) at least one course from each of the following groups: algorithms, programming languages, computer architecture, computer systems, and theory of computation; 2) at least three additional courses chosen with the approval of the major professor; 3) eight credits of thesis.

Program requirements for nonthesis option: 1) at least one course from each of the following groups: algorithms, programming languages, computer architecture, computer systems, theory of computation, and software design; 2) at least two courses from the applications group; 3) at least two more courses chosen with the approval of the advisor; 4) at least one of the ten courses listed above should include writing a substantial paper based on significant independent research; 5) passing a written comprehensive examination.

Program requirements for applied nonthesis option: 1) at least one course from each of the following course groups: algo-

ritms, programming languages, computer architecture, computer systems, and software design; 2) at least two courses from the applications group; 3) at least one course should include writing a substantial paper based on significant independent research; 4) an approved concentration in another discipline consisting of a minimum of four graduate courses in the area of concentration; 5) passing a written comprehensive examination; 6) minimum of 40 credits required. Approved concentrations for the applied nonthesis option:

Computers and Business Management: Students in this track take ACC 610 610 (4); FIN 601 (4), MGT 630 (4); MGT 681 (3); and two of the following courses—MSI 600 (2), 620 (2), 640 (2), and 684 (3).

Computers and Operations Research: Students in this track take IME 432 (3), 540 (3), 555 (3), and 565 (3).

Computers and Statistics: Students in this track take MTH 451 (3), 452 (3); and three of the following—STA 502 (3), 513 (3), 535 (3), 541 (3), 584 (3) or MTH 551 (3).

The department encourages other application areas in the physical, biological, mathematical, and social sciences. Students in the applied track will have an advisor in computer science and an advisor in their application area. Together, these advisors will approve the student's program of study.

### Doctor of Philosophy

See Applied Mathematical Sciences.

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## Dietetic Internship Certificate Program

See Nutrition and Food Sciences.

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## Economics

See Environmental and Natural Resource Economics.



## Education

M.A. 401-874-2564

Ph.D. 401-874-4165

*Faculty for the M.A.:* Professor Felner, *director of the School of Education*; Professor Boulmetis, *director of graduate studies*. Professors Brand, Byrd, Croasdale, Eichinger, Favazza, Heifetz, Kellogg, McKinney, Purnell, Willis, and Young; Associate Professor Hicks; Assistant Professors Adamy, Guglielmi, Seitsinger, and Shim; Professors Emeriti Bumpus, MacMillan, and Russo; Associate Professor Emeritus Nelson.

*Faculty for the Joint Ph.D. (URI-RIC):* Professor Heifetz, *URI co-director of graduate studies*; Professor Wollman-Bonilla, *RIC co-director of graduate studies*. Professors Boulmetis, Brady, Byrd, Eichinger, Feld, Felner, Horm-Wingerd, Marshall, McKinney, Purnell, Trostle Brand, G. Willis, W. Willis, and Young; Associate Professor Kovarsky; Assistant Professor Shim.

## Master of Arts

*Admission requirements:* A faculty interview is required. Individuals seeking to undertake the initial certification options in elementary and secondary education are expected to have a substantial academic background in the field of interest. In addition, these students should contact the department regarding the required admissions portfolio, interview process, and yearly admission deadline (or visit the Web page for these deadlines at [www.soe.uri.edu](http://www.soe.uri.edu)). For foreign students, a TOEFL score of 600 is required.

*Program requirements:* Individuals may choose the thesis or nonthesis option. Required are 30 credits for the elementary and secondary specialization; 33 credits for the adult education specialization; and a minimum of 34 credits for reading education; including a required core of at least six credits (a foundation and a research methodology course); two electives (six credits), and an academic specialization (18–24 credits). The nonthesis option requires a written comprehensive examination and at least one designated course

with a substantial paper involving significant independent research.

*Teacher certification option:* students who wish to pursue the initial teacher certification option of the elementary or secondary specializations take 19–34 additional credits. Students may obtain certification prior to completing the requirements for the M.A. See Teacher Certification on page 151.

*Specializations:* Students seeking the Master of Arts degree must declare an area of specialization. A specialization may be one predefined by the department or designed in accordance with the student's background and interest. Defined specializations include:

Elementary education—advanced study for elementary teachers; an option for students seeking initial certification in elementary teaching is also available.

Secondary education—advanced study for secondary teachers of English; history, languages, mathematics, science, and social studies; an option for students seeking initial certification in these areas is also available.

Reading education—program leading to advanced certification as reading specialist/consultant. Applicants must hold initial teaching certification in early childhood, elementary, or secondary education. Application materials can be obtained from the URI Graduate Admissions Office, Quinn 204, Kingston, RI 02881; 401-874-5930. A resume of experience must be submitted with an application.

Adult education—administration; adult literacy; education, training, and management (ETMS); gerontology; training and development; and vocational education.

## Doctor of Philosophy (Joint with Rhode Island College)

Rhode Island College and the University of Rhode Island offer a Ph.D. in education which prepares scholar practitioners for new professional roles as educational leaders, mentors, and scholars. The program is grounded in the knowledge bases of school teaching and learning. The program's four objectives provide a framework

for the preparation of scholar practitioners to: 1) develop and employ collegial relationships through professional collaboration; 2) acquire and apply the skills and processes of scholarly inquiry; 3) demonstrate expertise in an area of specialization that advances the mission of the American school; and 4) implement professional practices that promote progress in school settings.

Designed for professionals involved in prekindergarten to twelfth-grade education, the doctoral program admits 12 to 15 students per year. This cohort-based research program is for students who previously earned a master's degree from a regionally accredited institution. A major segment of each student cohort will be made up of teachers and administrators from Rhode Island committed to developing advanced teaching, leadership, and research skills.

*Admission requirements:* GRE general test, official transcripts, curriculum vitae, and letters of recommendation are required. Finalists in the application process must participate in a personal interview. Applicants are admitted for the fall semester only. The completed application package must be received by February 2. The program is offered jointly by the two institutions with single admissions and administrative processes. Prospective applicants should address inquiries concerning the program to one of the co-directors at either Rhode Island College or URI. Formal application materials can be obtained from either of the co-directors.

*Program requirements:* the program requires a minimum of 56 credits beyond the master's degree. Three year-long core seminars emphasize a clinically-based case study approach (EDP 610, 611; 620, 621; 630, 631, for a total of 18 credits). Field research seminars (EDP 641, taken six times for a total of six credits) are taken in parallel with the core seminars. Field-based research (EDP 622, two credits, taken in the second year) explores community service and service learning in the context of schools. Students gain research expertise to help their development as school lead-

ers through course work (EDP 615, 625, for a total of six credits) and the field research seminars. Scholarly expertise in a professional area is acquired through specialization courses (12 credits).

All students must complete a doctoral dissertation (12 credits). To progress through this program, students must: 1) receive positive recommendations from core seminar professors; 2) pass a qualifying examination upon completion of the first core seminar (EDP 610, 611) and the course in research methodology (EDP 615) if they have not previously completed a master's degree in education or a closely related field); 3) pass a comprehensive examination after completion of all core seminars and research courses; and 4) complete a successful dissertation and defense.

## Electrical Engineering

M.S., Ph.D.  
401-874-2506

*Faculty:* Professor Vaccaro, *chairperson*; Professor Mitra, *director of graduate studies*. Professors Boudreaux-Bartels, Daly, Fischer, Jackson, Kay, Kumaresan, Lo, Mardix, Ohley, Sun, Sunak, Swaszek, Tufts, and Yang; Adjunct Professor Banerjee; Adjunct Assistant Professor Williams; Professors Emeriti Lengyel, Lindgren, Sadasiv, and Spence.

### Specializations

*Acoustics and underwater acoustics:* communication, detection, classification, and matched-field localization for underwater acoustic channels, speech processing.

*Biomedical engineering:* physiologic systems modeling and control; medical instrumentation employing digital computer techniques, pattern recognition and image processing in medicine (texture analysis, image classification, and segmentation); biological effects of electric and magnetic fields at the cellular level.

*Computer engineering and VLSI:* micro-programming systems, multiprocessing,

high-speed signal processing; processor realization using VLSI; MOS layout and microchip design; data structures and computer architectures, fault-tolerant computing.

*Communication theory:* statistical and computer communications; vector quantization; noise modeling and detection; data compression and coding; local area networks, reliable and secure communication.

*Digital signal processing:* detection and parameter estimation; prediction and filtering; spectrum analysis; array processing; digital filter synthesis; adaptive filtering, algorithm design.

*Electrical and optical properties of materials:* optical properties of nonmetallic solids, laser-matter interaction, photocathodes; crystallographic techniques for submicron X-ray lithography; radiation damage in nonmetallic solids; semiconductor physics.

*Electromagnetic fields and optical communication:* numerical and approximate methods for calculation of electromagnetic fields in inhomogeneous and anisotropic structures (related to biological effects of electromagnetic fields); evaluation of mode characteristics in optical and infrared fiber waveguides; fiber optic sensors; fiber optical amplifiers; electro-optic modulators; radiation effects.

*Systems theory:* control and estimation theory, intelligent systems; multivariable systems; nonlinear systems, modeling of deterministic and stochastic systems; model order reduction; optimal smoothing, filtering and prediction; pattern recognition, classification, computer vision; computerized imaging systems and image analysis.

### Master of Science

*Admission requirements:* GRE and B.S. degree in electrical, computer, or biomedical engineering, physics, mathematics, or computer science. Preparation in related fields such as mechanical engineering or in the life sciences may be acceptable.

*Program requirements:* thesis or non-thesis option—minimum of 30 credits in science and engineering with a minimum of 16 credits in graduate-level electrical

engineering courses. One credit of the departmental seminar (ELE 601 and/or 602) is required of all students. Up to two credits of seminar may be used toward the 30-credit master's requirement. Individual programs are designed in accordance with the students' backgrounds and interests, but require departmental and Graduate School approval. For the thesis option, the thesis counts as six to nine credits. For the nonthesis option, a written master's examination and one course involving significant independent research and a substantial paper are required.

### Doctor of Philosophy

*Admission requirements:* GRE and M.S. degree or equivalent in electrical, computer, or biomedical engineering, physics, mathematics, or computer science, or a related field. Exceptional candidates may be admitted directly from the B.S. degree.

*Program requirements:* a minimum of 72 credits beyond the B.S. degree. The M.S. degree may count up to 30 of these credits; the remaining credits are split between course work and dissertation research. Students with an M.S. in an appropriate field complete between 18–24 dissertation credits; students without the M.S. may take between 18 and 30 (in either case additional dissertation credits may be taken for no program credit). A qualifying examination is required. A comprehensive examination is required after all formal course work is completed. Two credits of the departmental seminar (ELE 601 and/or 602) are required of all students. These credits may not be counted as part of the 42 credits required beyond the master's degree.

## English

M.A., M.A./M.L.I.S., Ph.D.  
401-874-5931

*Faculty:* Professor Donnelly, *chairperson*; Professor Stein, *director of graduate studies*. Professors Arakelian, Campbell, Cappello, Dvorak, Kunz, Leo, Neuse, Okeke-Ezigbo, Pearlman, Schwegler, and Shamooin; Asso-

ciate Professors Cook, Gititi, Martin, Reaves, Reynolds, Vaughn, and Walton; Assistant Professors Barber, Karno, Mandel, Mensel, Miles, Scheil, and Trimm; Professors Emeriti Barker and Cuddy; Associate Professor Emeritus Burke and Cane.

### Specializations

American and British literature and culture; critical and cultural theories; rhetoric and composition studies.

### Master of Arts

**Admission requirements:** a B.A. in English or the equivalent, with a quality point average of B (3.00 on a 4.00 scale) or better in all English courses. Completed application packages are to be sent directly to the Director of Graduate Studies, English Department, Independence Hall, University of Rhode Island, and must be received by February 1. Applications received after that deadline but before July 15 will be reviewed on a space-available basis until the program is filled. Applicants will be accepted for September admission only. GREs (both general and subject) are requested but not required. Nonnative speakers of English must have a minimum score of 630 on the TOEFL in order to be considered for admission.

**Program requirements:** there are three options for fulfilling requirements—24 credits plus thesis (six credits); or 30 credits including a course requiring a substantial paper involving significant independent study plus a comprehensive examination based on a departmental reading list; or 30 credits (including ENG 595) plus a portfolio and a related oral examination. ENG 510 and 514 are required. The specialization in rhetoric and composition studies requires ENG/WRT 512 and 524.

### M.A. in English and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degree of Master of Arts in English and Master of Library and Information Studies.

**Admission requirements:** GRE and other requirements listed for English and library science. Applicant must apply and be accepted in both programs. The application for each program must indicate English/library and information studies as the field of specialization.

**Program requirements:** Students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit M.A. in English. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. ENG 510 and 514 are required. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72. Students must complete at least 36 credits in librarianship and at least 24 credits in English.

### Doctor of Philosophy

The Ph.D. program stresses faculty/student mentoring. Admission is competitive and based mainly on academic merit, demonstrated capability to do research, and the match of research interests between the applicant and faculty in indicated or developing areas of specialization.

**Admission requirements:** M.A. in English or equivalent. Although grades are not the only criterion, applicants having less than a 3.50 quality point average (on a 4.00 scale) have a low probability for admission. Completed application packages should be sent to the Director of Graduate Studies, English Department, Independence Hall, University of Rhode Island, and must be received by February 1. Applications received after that deadline but before July 15 will be reviewed on a space-available basis until the program is filled. Applicants will be accepted for September admission only. GREs (both general and subject) are requested but not required; a writing sample of 15 pages maximum is required. Nonnative speakers of English must have a minimum score of 630 on the TOEFL in order to be considered for admission.

**Program requirements:** 72 credits—30 credits approved for M.A. work; 24 credits of course work plus 18 credits of dissertation research. ENG 510 and 514 are required. Two written comprehensive examinations, one publishable article, and an oral examination. A dissertation and an oral defense. For specialization in rhetoric and composition studies, ENG/WRT 512, 645, and 647 are required. A limited number of 500- and 600-level courses in other departments and programs may be used for program credit if approved as part of the student's program of study before the courses are taken. (In some cases, a research tool may be required by a student's doctoral committee in consultation with the director of graduate studies.)

### Financial Aid

All requests for assistantships must be sent to the director of graduate studies with the application packet. In addition to teaching assistantships, there are diversity assistantships and an editorial graduate assistantship for the journal *ATQ: A Journal of 19th Century American Literature and Culture*. Priority will be given to Ph.D. applications received by February 1; thereafter, assistantships will be awarded on a space-available basis.

### Environmental and Natural Resource Economics

M.S., Ph.D.  
401-874-2471

**Faculty:** Professor Wessells, *chairperson*; Professor Sutinen, *director of graduate studies*. Professors J. Anderson, Gates, Grigalunas, Opaluch, Swallow, and Tyrrell; Associate Professor Wichelns; Assistant Professor C. Anderson; Adjunct Professor Shogren.

### Specializations

Environmental economics, renewable and nonrenewable natural resource economics, fisheries management, international fisheries development, international trade, fisheries marketing, coastal zone

land use and management, quality of the marine environment, aquaculture economics, offshore oil and gas management, and natural resource pricing policies.

### Master of Science

*Admission requirements:* the GRE is required. A strong undergraduate record in economics, statistics, and mathematics is highly desirable.

*Program requirements:* for the thesis option, 24 credits including REN 501, 502, 528, 534, 535, 576, and 599, in addition to a written comprehensive examination, and at least six M.S. thesis credits. For the nonthesis option, 34 credits including 501, 502, 528, 534, 535, 576, and 598, in addition to a written comprehensive examination, and at least one REN 598 credit given for a substantial paper requiring significant independent research. REN 501 must be taken each semester by full-time graduate students in residence, but only one credit may count toward the program.

### Doctor of Philosophy

*Admission requirements:* GRE, six credits in statistics, and the following courses or their equivalents—ECN 327, 328, and 375.

*Program requirements:* the Ph.D. qualifying exam is required of students admitted without the master's degree. REN 501, 502, 527, 528, 534, 535, 576, 602, 624, 628, 630, 634, 676, and 699 are required. REN 501 must be taken each semester by full-time graduate students in residence, but only one credit may count toward the program. Students with a master's degree in a closely related field may transfer up to 30 credits toward their Ph.D. Additional courses may be elected from appropriate offerings in economics, resource economics, engineering, geography, oceanography, mathematics, natural resources science, political science, statistics, computer science, finance, marine affairs, and management science. The Ph.D. dissertation will be written on a problem involving marine resources, coastal issues or an associated industry, such as minerals, petroleum, fisheries, water, transportation, recreation, or waste disposal.

## Environmental Science and Management

(Interdepartmental)

M.E.S.M.  
401-874-2957

At press time, the College of Environment and Life Sciences (CELS) is in the process of securing approval by the Rhode Island Board of Governors to offer the Master of Environmental Science and Management degree at URI's Kingston Campus for the 2002–03 academic year. This interdisciplinary, interdepartmental, professional degree program would draw on the expertise of more than 40 faculty from seven departments. Specializations include conservation biology; earth and hydrologic science; environmental policy and management; remote sensing and spatial analysis; sustainable systems; and wetland, watershed, and ecosystem science.

The primary focus of the program is the application of scientific knowledge in environmental problem-solving and management. It is designed for students seeking careers with local, state, or federal government; nongovernmental organizations; or private industry. The M.E.S.M. program features a blend of natural and social sciences, to better prepare students to grapple with increasingly complex environmental management issues.

For more detailed information on admission and program requirements, contact CELS Graduate Programs Coordinator Dr. Roger LeBrun at 401-874-2934, lebrun@uri.edu, or the dean's office in the College of the Environment and Life Sciences.

## Environmental Sciences

M.S., Ph.D.

### Entomology

401-874-2791, [www.uri.edu/cels/pls/](http://www.uri.edu/cels/pls/)

*Faculty:* Professor Casagrande, *chairperson*; Professor LeBrun, *director of graduate studies*. Professors Alm, Casagrande, LeBrun,

Logan, and Mather; Professor in Residence Ginsberg; Adjunct Assistant Professor Gettman.

## Fisheries, Animal, and Veterinary Science

401-874-2477, [www.uri.edu/cels/favs/](http://www.uri.edu/cels/favs/)

*Faculty:* Professor Rice, *chairperson*; Professor Bengtson, *director of graduate studies*. Professors Bradley, DeAlteris, Mallilo, Nippo, Recksiek, and Rhodes; Assistant Professors Gomez-Chiarri and Whitworth; Adjunct Professors Klein-MacPhee, Kocik, Musick, Pechenik, and Smolowitz; Adjunct Associate Professor Bodammer; Adjunct Assistant Professors Berlinsky, Rheault, and Wetherbee; Professor Emeritus Chang.

## Geosciences

401-874-2265, [www.uri.edu/cels/geo/](http://www.uri.edu/cels/geo/)

*Faculty:* Professor Murray, *director of graduate studies*. Professor and State Geologist Boothroyd; Professors Cain and Hermes; Associate Professors Frohlich and Veeger; Assistant Professor Boving; Adjunct Associate Professors Burks, Civco, and Fischer.

## Natural Resources Science

401-874-2495, [www.edc.uri.edu/nrs/](http://www.edc.uri.edu/nrs/)

*Faculty:* Professor Husband, *chairperson*; Professor Golet, *director of graduate studies*. Professors Amador, August, Gold, and Wright; Associate Professors Paton and Yeqiao Wang; Assistant Professors Brososke, McWilliams, and Stolt; Adjunct Professors Lashomb and Perez; Adjunct Associate Professors Gorres and Groffman; Adjunct Assistant Professors Compton, Dabek, and Yong Wang; Adjunct Research Professor Buckley; Professor Emeritus Brown.

## Plant Sciences

401-874-2791, [www.uri.edu/cels/pls/](http://www.uri.edu/cels/pls/)

*Faculty:* Professor Casagrande, *chairperson*; Professor LeBrun, *director of graduate studies*. Professors Jackson, Maynard, and Sullivan; Associate Professors Englander and Ruemmele; Assistant Professor Mitkowski; Adjunct Professor Taylorson; Professors Emeriti Beckman and Hull.

## Specializations

**Entomology:** insect ecology, pest management, aquatic entomology, plant-insect interactions, biological control, and biology and ecology of disease-transmitting arthropods. The entomology program has a biological quarantine laboratory, the only university-affiliated facility in the Northeast. Faculty and students search abroad for natural enemies of pest species and study them in the laboratory under secure conditions. The laboratory, certified by the U.S. Department of Agriculture as an insect-quarantine facility, is an important component of a long-standing program on insect ecology and the development of environmentally sensitive pest-control measures.

**Fisheries, Animal, and Veterinary Science:** aquacultural production of finfish and shellfish, production of terrestrial livestock, physiological and endocrinological aspects of stress in animals, genetics of cultured and wild populations of fish and shellfish, fish population dynamics, physiological ecology of economically important fish and invertebrates, the pathology of aquatic animals, and the effects of environmental pollution on marine organisms.

**Geosciences:** sedimentology, stratigraphy-paleontology, coastal geology, geochronology, glacial geology, hydrogeology, applied geophysics, GIS mapping, petrology, and structure and tectonics.

**Natural Resources Science:** ecosystem ecology, biogeochemistry, soil genesis and classification, soil ecology and microbiology, biodegradation and bioremediation, hydrology and watershed science, wetland science and management, restoration ecology, landscape ecology, GIS and spatial analysis, wildlife and conservation biology, and avian ecology.

**Plant Sciences:** plant ecology and physiology, plant molecular biology and genetics, plant pathology, environmental horticulture, environmental plant biology, sustainable agriculture, and golf and sports turf management. The department operates 50 acres of turfgrass, horticulture and

plant science research and education farm centers. URI's Turfgrass Center is the oldest research and teaching program in the U.S.

**Master of Science** (*All departments or programs above except for Fisheries, Animal, and Veterinary Science. See separate listing in following section.*)

**Admission requirements:** GRE and bachelor's degree in a biological or physical science, or engineering. Applicants with course deficiencies may be required to take appropriate undergraduate courses for no program credit, and to demonstrate, by their performance in such course work or through a qualifying exam, basic knowledge of the subject matter in the area(s) of deficiency.

**Program requirements:** for the thesis option, six credits of thesis and a minimum of 24 credits of course work, including graduate seminar. An oral preliminary examination may be required for certain fields of study. For the nonthesis option, a minimum of 36 credits of course work, including graduate seminar and at least 14 credits of course work from the home department, three credits of nonthesis Master's Research (EVS 598), three credits of statistics, and a written comprehensive examination. An oral preliminary examination and advanced seminars may be required in certain fields of study.

**Doctor of Philosophy** (*All departments or programs above*)

**Admission requirements:** GRE and bachelor's degree in a biological, physical science, natural resources science, or engineering; specific undergraduate majors or course work may be required for certain fields of study. Master's degree with thesis in biological science, physical science, or natural resources science is highly recommended.

**Program requirements:** a minimum of 72 credits of advanced course work beyond the bachelor's degree (a master's degree may count for up to 30 credits), 18 of which are dissertation credits and at least two of which are graduate seminar credits;

comprehensive examination; and dissertation. A qualifying examination will be required for students who are admitted without a master's degree and may be required for students whose prior degrees are outside of the proposed Ph.D. field of study.

## Fisheries, Animal and Veterinary Science

M.S.  
401-874-2477

See Environmental Sciences for the Ph.D.

**Faculty:** Professor Rice, *chairperson*; Professor Bengtson, *director of graduate studies*. Professors Bradley, DeAlteris, Mallilo, Nippo, Recksiek, and Rhodes; Assistant Professors Gomez-Chiarri and Whitworth; Adjunct Professors Klein-MacPhee, Kocik, Musick, Pechenik, and Smolowitz; Adjunct Associate Professor Bodammer; Adjunct Assistant Professors Berlinsky, Gleason, Rheault, and Wetherbee; Professor Emeritus Chang.

## Specializations

In the specialization *animal science*, regional, national, and global problems are studied in the areas of animal behavior, endocrinology, nutrition, physiology, and reproductive biology. Both domestic livestock and laboratory animals are used in a research context. In the specialization *animal health and disease*, animal health problems of regional, national, and global significance are studied. Bacterial and viral diseases are characterized, and the contributions of stress and pathologic conditions to disease are considered.

The *aquaculture* specialization includes the study of aquaculture of finfish and shellfish and the genetics, nutrition, and physiology of fishes. The specialization in *fisheries* includes the study of fisheries science and technology. *Aquatic pathology* deals with the pathology of aquatic animals and the effects of environmental pollution on aquatic organisms.

## Master of Science

*Admission requirements:* GRE and an undergraduate major in the biological sciences with a concentration in animal science, fisheries technology, marine biology, microbiology, preveterinary medicine, or zoology, or postgraduate professional degrees (M.D., D.V.M., V.M.D.); one year of organic chemistry and physics. Courses in statistics, histology, and physiology are strongly recommended.

*Program requirements:* for *animal science*, thesis and 24 credits of course work to include two credits of AFS 501 and/or 502; AVS 412, 472; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For *animal health and disease*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 401, 534; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

For *fisheries*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; two courses in statistics (at least one at the 500 level); AFS 415, 421. A total of 14 credits of AFS course work must be included in the program of study. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For *aquaculture*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 400, 483, 581, 586. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For *aquatic pathology*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 400, 401, 486; MIC 533. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

## History

M.A., M.A./M.L.I.S.  
401-874-2528

*Faculty:* Associate Professor Honhart, *chairperson*; Professor Strom, *director of graduate studies*. Professors Cohen, Klein, Thurston, and Weisbord; Associate Professors George, Mather, Pegueros, Rollo-Koster and Schwartz; Assistant Professors Ferguson, Joseph, Rusnock, and Sterne; Adjunct Associate Professor Klyberg; Professors Emeriti Briggs, Findlay, Gutchen, and Kim; Assistant Professor Emeritus Silvestri.

## Specializations

United States and Europe, with an emphasis on social, cultural, and political history. Students may complement their work in these fields with courses in Latin American or Asian history or with courses taken outside the department, particularly in political science, education, English, and languages.

The master's program in history includes both class work and individual instruction in the form of 500-level seminars; small 400-level courses that include undergraduates; tutorials; and directed study courses, as well as master's thesis research for those who choose the thesis option. All graduate work stresses independent research and is designed to promote critical reading and writing. The diversified program—with its requirement for work in more than one field of history and the opportunity it offers of work in another discipline—should be of service both to students who wish to continue their graduate education at the doctoral level and to those who are interested in secondary teaching. Students are required to develop a systematic program of studies with the director of graduate studies during their first semester as a master's degree candidate.

For tutorials (HIS 502, 503, 536, 537, 588, and 589), students participate in 300-level courses and complete additional projects assigned by the instructors. Tutorial arrangements are made with the in-

structor at the beginning of the semester. To be eligible, a graduate student must not have taken the 300-level course or one closely resembling it as an undergraduate.

Students may also take up to six credits from the graduate offerings at Rhode Island College (in Providence); available courses will be posted in the department each semester. These courses must be approved for program credit prior to registration and must be included in the six-credit maximum for transfer credit and the 12-credit maximum for advanced standing.

## Master of Arts

*Admission requirements:* GRE and bachelor's degree. While 24 credits of history are usually required, majors in related fields may be admitted with the permission of the director of graduate studies and the department chairperson.

*Program requirements:* there are thesis and nonthesis options. In both options, the student must declare a primary concentration in European or United States history, and a secondary concentration in another area of history or in a related field outside the department. An approved program will require 30 credits, including at least three credits from HIS 401, 441, or 481 and at least nine credits from HIS 506, 507, and 508. Three of these nine credits may be filled by a 500- or 600-level seminar in another department. The nonthesis option will require completion of a research paper in HIS 495, or in exceptional circumstances, in another graduate-level course with the permission of the instructor and the graduate director or department chair. Admission to the thesis option will be granted after evaluation, by the director of graduate studies and two faculty members who are familiar with the student's first year of graduate work.

In the nonthesis option, the student may earn no more than 12 credits in tutorials (502, 503, 536, 537, 588, and 589) and directed studies (591). Nine credits will normally be taken in the secondary concentration. A four-hour written comprehensive examination in the student's primary and secondary concentrations and a follow-up oral examination are required.

The examining committee will normally consist of two faculty members from the student's primary concentration and one from the secondary concentration. In the thesis option, the student may earn a maximum of nine credits of HIS 599, a maximum of three credits of Directed Study (HIS 591), and a maximum of nine credits of tutorials (HIS 502, 503, 536, 537, 588, 589). Work in the secondary concentration may be limited to six credits.

### **M.A. in History and M.L.I.S. Cooperative Program**

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

*Admission requirements:* GRE and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application for each program must indicate history/library and information studies as the field of specialization.

*Program requirements:* students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit program for the M.A. in history. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72 credits.

### **Human Development and Family Studies**

M.S. (specializations listed below)  
401-874-2150

*Faculty:* Professor Newman, *chairperson*.

#### **Human Development and Family Studies**

Professor Diane Horm-Wingerd, *director*.  
Professors Anderson, Clark, Cohen, and Xiao; Associate Professor Kalymun;

Assistant Professor McCurdy; Adjunct Professors Caruso and Newman; Professor Emerita Rae; Associate Professor Emerita Greene.

#### **Marriage and Family Therapy**

Professor Adams, *director*. Professor Maynard; Assistant Professor Prouty; Professor Emerita Rae.

#### **College Student Personnel**

Associate Professor Schaffran, *director*. Associate Professors Knott and Richmond; Assistant Professor Branch.

#### **Human Development and Family Studies**

*Admission requirements:* GRE or MAT, and 18 undergraduate credits distributed among at least three of the following areas: human development and family studies, psychology, sociology, biology, and education. Subspecializations are available in child development, early childhood education, adult development/gerontology, public policy/administration, family studies, and family financial counseling/education.

*Program requirements:* a minimum of 41 credits of approved graduate courses, including 17 of core courses required for all students: HDF 500, 530, 570, 533 or 560 or 562, 580/581, and one additional course in statistics. In addition to the core, students will select a minimum of 12 credits in a specialization including at least one developmental seminar. Also required are a comprehensive examination and master's thesis. Students will have the option of including a policy or administrative internship as part of the program of study.

*Early Childhood Education (ECE):* If you wish to pursue early childhood education teacher certification (nursery to grade 2) and do not have a human development and family studies background, you will need to take certain courses from the HDF undergraduate curriculum and should consult an HDF advisor. Students apply to URI's Teacher Certification Program (nondegree status) administered through the Graduate School and must submit a candidate's statement, official transcripts of all previous course work, and two letters

of recommendation. Applicants must also complete the same ECE admissions process as undergraduate students including the portfolio, admission tests, and interview coordinated through the University's Office of Teacher Education.

#### **Marriage and Family Therapy**

*Admission requirements:* GRE or MAT; at least 12 credits of relevant preparation courses, including family relations, developmental theory, abnormal psychology, and introduction to counseling or equivalent courses. Two letters of recommendation should be from supervisors in a related field attesting to observed experience, emotional stability, and maturity. After initial screening, qualified applicants will be required to come to campus for a personal interview. The goal of the personal interview is to determine whether the applicant possesses the full range of academic qualifications, experiential background, clinical competency, and readiness to undertake the rigors of an academically and emotionally demanding clinical preparation program. Program faculty members will conduct the interviews. Selection for admission to this program is competitive and enrollment is limited. Diversity among the students in the program is a major program goal. The program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education. Review of applications begins February 1.

*Program requirements:* a minimum of 45 credits of approved graduate courses, including 12 credits of practica and internship, a comprehensive examination, and a research project. This program involves intense clinical practice and requires a year-long clinical placement at approved agencies or the department's Family Therapy Clinic.

#### **College Student Personnel**

The mission of URI's College Student Personnel program is to prepare reflective practitioners for professional careers in student affairs. Graduates seek entry-level positions such as advisors, coordinators, directors and deans at institutions of higher

education. Our vision is to engage one another in an extended community of co-learning relationships that inspire optimal development and promote growth in leadership, all based on creating and sustaining the best practices in college student personnel preparation and professional work.

*Admission requirements:* At least two letters of recommendation (one faculty member and one practitioner), GRE or MAT scores, interview; preference is given to applicants with experience in college student affairs. Personal statement should indicate reasons for pursuing graduate work in college student personnel and future professional interests in the field.

*Program requirements:* 42-credit program consisting of 26 credits in core HDF courses (550 [1], 551, 560, 562, 567, 568, 570, 573 [1], 574, 575 [1], 576 [2]), six elective credits, a multi-part comprehensive examination, plus one of the following capstone options—nonthesis internship (HDF 580 [2], 581 [2], 583, 584), nonthesis action research project (HDF 595 [6], HDF 580 [1], HDF 553), or thesis (HDF 599 [6], HDF 580 [1], HDF 553).

## Labor Relations and Human Resources

M.S., M.S./J.D.  
401-874-2239

*Faculty:* Professor Scholl, *director, Labor Research Center.* Professors Armstrong, Barnett, Beauvais, Burkett, Cohen, Cooper, Croasdale, Della Bitta, Hennessey, Jarrett, Ketrow, Lardaro, Laviano, McIntyre, Mead, Miller, Overton, Poggie, Ramstad, Rothstein, Scholl, Starkey, Strom, and Weisbord; Associate Professor Molloy; Assistant Professor Bodah; Adjunct Professors Birt, Keating, and Taylor; Professors Emeriti Anderson, Gersuny, Rayack, and Schmidt.

This program is designed for union, government, neutral, or human resource management, labor, and industrial relations professionals, or for those students who aspire to such positions. Students in other graduate programs may find it rewarding and professionally desirable to en-

roll in one or more of the labor relations and human resource courses. All courses are offered in the very late afternoon or in the evening in Providence and Kingston so that they are convenient for working students. Full-time and part-time programs are also available.

### Specializations

The following areas of specialization are available with elective and required courses listed. Substitutions may be made with permission of the director of the Labor Research Center and approval of the Graduate School.

*Labor relations:* LRS 520 and 545 and two courses from LRS 432, 503, 532, 533, 543, 546, 579, 581, 591; MGT 630 and 640.

*Human resources:* LRS 432, 503, 520, 532, 533, 543, 545, 546, 579, 581, 591; MGT 630.

Exceptional students who come into the program with a well-defined interest, as well as a proposed plan of study, may choose to create their own specializations by choosing four courses in an area that satisfies their professional needs, e.g., computer science or statistics, economics or social policy, law and legal processes, or workplace issues such as alcohol and drug abuse, sexual or age discrimination, or racism.

### Master of Science

*Admission requirements:* GRE or MAT or GMAT. Undergraduate majors in any field are considered for admission; those with majors in social science, history, management, and labor studies are especially encouraged to apply, as are those with engineering, nursing, education, urban affairs, black studies, and women's studies backgrounds. Professional experience in labor and industrial relations will carry additional weight in admission decisions.

*Program requirements:* minimum of 39 credits, including 27 credits in core courses and 12 credits of specialization. The required core courses are: LRS/HIS 544, LRS/PSC 521, LRS/ECN 526, LRS 500, 531, 542, 541, 551, and 580. Students are ad-

vised that many of the core required courses and electives in the program assume competence in basic statistics and economics as well as a working knowledge of computers. Students should remedy any deficiencies in these areas either prior to or during enrollment in the program. Please contact the director of the Labor Research Center for further advice.

### Joint Program: Master of Science in Labor Relations and Human Resources (URI) and Juris Doctorate (Roger Williams University School of Law)

A cooperative dual degree program offered at URI and Roger Williams University School of Law permits dual enrollment leading to an M.S. in labor relations and human resources and a J.D. The integrated program of the two degrees allows a student to complete both programs in four years instead of the five required if both degrees are pursued separately.

*Admission requirements:* students must apply and be accepted into each program under the separate admissions requirements currently in effect at each school. Applicants must indicate the M.S./J.D. on the "Degree Sought" section of the URI application form.

*Program requirements:* at Roger Williams University, the J.D. program requires 90 credits, which can be completed on a full-time basis in three years. The M.S. degree in labor relations and human resources at URI requires 39 credits, which can be completed on a full-time basis in two years. A student matriculated in the joint program will take some credits in one program that will help satisfy the overall credit requirements of the other degree program as well. Students in the joint program must complete the following core required courses as part of their 30-credit requirement at URI in addition to nine credits taken at Roger Williams: LRS 542, 551, and 580; LRS/MGT 500; LRS/PSC 521; LRS/ECN 526; and LRS/HIS 544. Students who specialize in human resources must also take MGT 640 and 641, while students specializing in labor relations must take LRS 520 and 545. Students must complete



the required law school curriculum at Roger Williams. For students matriculated in the joint program, Roger Williams will accept the following 15 URI credits to satisfy the requirements for the J.D. degree: LRS 542 and 580; LRS/ECN 526, LRS/PSC 521, and LRS/MGT 500.

## Languages

See Spanish.

## Library and Information Studies

M.L.I.S., Cooperative Programs  
401-874-2947

*Faculty:* Professor Havener, *director, Graduate School of Library and Information Studies*; Associate Professor Carson, *assistant director and coordinator of distance learning*. Professors Gandel and Tryon; Associate Professor Eaton, Gilton, Ma, and McCarthy.

## Specializations

In support of the University of Rhode Island's mission, the Graduate School of Library and Information Studies exercises leadership in the global information age through research, service, and the preparation of knowledgeable and ethical professionals who can serve the library and information needs of a diverse society. The school prepares students for professional service and leadership in libraries and information agencies by offering an ALA-accredited program leading to the Master of Library and Information Studies (M.L.I.S.) degree. It also provides an opportunity for students to pursue simultaneously master's degrees in library and information studies and in history or public administration. The school library media specialization is accredited by NASDTEC and NCATE.

The MLIS program prepares students for careers in academic, school, public or special libraries, or other organizations. If they wish, students may specialize in children's and young adult's services, refer-

ence and bibliography, cataloging, special collections and rare books, automation, or information science. There are increasing opportunities for employment in nontraditional information positions in business and government.

## Master of Library and Information Studies

*Admission requirements:* bachelor's degree (B average) and GRE or MAT at the 50th percentile or above. GRE or MAT waived for applicants with a master's degree. The completed application package should be received by October 15 for spring admission, March 15 for summer admission, and June 15 for fall admission.

*Program requirements:* 42 credits, 18 in required core courses (LSC 502, 503, 504, 505, 508, and 557) and 24 in electives, six of which may be taken in courses outside library science when relevant to the student's specialization; one course with major paper requiring significant independent research; and a written comprehensive examination. Students in the school library media program or students planning to take both LSC 530 and 531 may substitute both courses for LSC 503. Up to 36 hours may be taken at the regional centers in Massachusetts and at the University of New Hampshire at Durham. No more than six credits or two courses may be taken in nonmatriculating status for transfer into the degree program. Students in the school library media track must meet particular state requirements.

Requirements for the M.L.I.S. must be completed within a period of four calendar years. A one-year extension, to five calendar years, may be granted for good cause by the G.S.L.I.S. faculty with notice to the dean of the Graduate School in response to a student's petition. Further extensions, to a maximum of seven calendar years, are possible under Graduate School policy, but are generally undesirable because of the rapid change in library and information services. If such extensions are granted, courses completed more than five calendar years prior to graduation will no longer be valid, and must be replaced by new

courses or reinstated by examination to ensure that the graduate's knowledge of the field is current.

## M.A. in History and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

*Admission requirements:* GRE (subject test desirable) and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application to each program must indicate history/library and information studies as the field of specialization.

*Program requirements:* students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit program for the M.A. in history. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72 credits.

## M.P.A. and M.L.I.S. Cooperative Program

A second cooperative program permits joint enrollment in the Master of Library and Information Studies and Master of Public Administration programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to serve as electives in the other, and for six credits to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

*Admission requirements:* GRE and other requirements listed for M.L.I.S. and M.P.A. Applicant must apply and be accepted in both programs. The application to each program must indicate M.L.I.S./M.P.A. as the field of specialization.

*Program requirements:* each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

### **M.A. in English and M.L.I.S. Cooperative Program**

By proper selection of course work, a student may simultaneously earn the degree of Master of Library and Information Studies and Master of Arts in English.

*Admission requirements:* GRE and all other requirements listed for M.L.I.S. and M.A. in English. Applicant must apply to both programs and be accepted by both. The application to each program must indicate English/library and information studies as the field of specialization.

*Program requirements:* Students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit M.A. in English. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. ENG 510 and 514 are required. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72. Students must complete at least 36 credits in librarianship and at least 24 credits in English.

### **Other Cooperative Programs**

Under existing University policy, students may be able to establish cooperative programs with other master's degree programs within the University. Interested persons should consult with the director.

## **Manufacturing and Industrial Engineering**

M.S. (Manufacturing Engineering)  
Ph.D. (Industrial and Manufacturing Engineering)  
401-874-2455

*Faculty:* Professor Knight, *chairperson*; Professor Sodhi, *director of graduate studies*. Professor Dewhurst; Associate Professors Shao and Wang; Assistant Professor Studar; Professor Emeritus Boothroyd.

### **Specializations**

Fundamentals of manufacturing processes and manufacturing automation; computer systems in manufacturing, including applications for inspection, rapid prototyping, and control.

Product design for manufacture and assembly, and design evaluation for reliability, maintenance, and recycling.

Engineering optimization with applications to manufacturing systems.

Facilities planning and analyses of material handling in manufacturing organizations.

Quality and process control of production.

### **Financial Aid**

A number of graduate and research assistantships are available for qualified graduate students.

### **Master of Science**

*Admission requirements:* B.S. degree in industrial, manufacturing or mechanical engineering; applicants with a B.S. in another field of engineering, mathematics, physics, chemistry, or computer science will be considered, but will be required to complete some deficiency courses. GRE required for graduates of non-U.S. universities only.

*Program requirements:* the thesis option requires 30 credits including thesis (six to nine credits); IME 549 or 550 or 591/592, 542 and 545; at least three elective courses from at least two of the following areas—fundamentals of manufacturing processes and manufacturing properties of materials,

design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems.

The nonthesis option (for part-time students with department permission) requires 30 credits of course work including IME 542, 545 and 549 or 550 or 591/592, plus at least 12 credits from at least three of the following areas: fundamentals of manufacturing, processes and manufacturing properties of materials, design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems. A comprehensive examination must also be taken on three of the above areas. IME 240 or equivalent is a prerequisite.

*Program mission statement:* Consistent with the department's mission, the M.S. program will enhance the technical skills and professional competence of graduate engineers, positioning them to improve manufacturing competitiveness. Program graduates will have:

- 1) Proficiency in a broad range of basic engineering skills including manufacturing properties of materials and manufacturing process, consistent with an ABET-accredited graduate engineering program;
- 2) Understanding of the application of methods to increase the competitiveness of products and processes;
- 3) Understanding of the relationships between product design decisions and the development of competitive products, through reduced cost and improved manufacturing efficiency;
- 4) Advanced proficiency in selected topics in manufacturing processes and manufacturing properties of materials, manufacturing systems engineering, and computer applications related to manufacturing;
- 5) The ability to carry out an independent research study in a selected area or demonstrated knowledge of a broad range related topics; and
- 6) Advanced proficiency in student-selected topics in manufacturing engineering, manufacturing properties of materials, industrial engineering, and related disciplines.

## Doctor of Philosophy

*Admission requirements:* B.S. degree in industrial, manufacturing, or mechanical engineering; an applicant with a B.S. degree in another field of engineering or in mathematics, physics, chemistry, or computer science will be considered; such applicants will be required to complete some deficiency courses. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree. GRE required for graduates of non-U.S. universities only.

*Program requirements:* qualifying examination may be waived for students with a master's degree. A minimum of 72 credits beyond the B.S. degree, 18 of which are dissertation credits (a master's degree may count for up to 30 credits). A total of 54 credits of course work is required, including IME 542, 545, 549 or IME 550 or 591/592 and 24 credits from at least three of the following areas: fundamentals of manufacturing processes and manufacturing properties of materials, design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems. Eighteen credits of IME 699. Reading proficiency in a foreign language may be required by the student's committee. A comprehensive examination must be taken after all formal course work is completed. All Ph.D. candidates must register full-time for two consecutive semesters prior to taking the Ph.D. comprehensive examination. Dissertation research makes use of major modern laboratories in the listed areas of specialization.

*Also see Applied Mathematical Sciences.*

## Marine Affairs

M.A., M.M.A., M.M.A./J.D.—RWU, Ph.D.  
401-874-2596

*Faculty:* Professor Juda, *chairperson*; Professor Burroughs, *director of master's studies*; Assistant Professor Macinko, *director of Ph.D. studies*. Professors Hennessey, Marti, Nixon, and Pollnac; Associate Professor Gordon; Assistant Professors Macinko and

Morin; Professors Emeriti Alexander, Knauss, and West; Associate Professor Emeritus Krausse.

## Specializations

Coastal zone management, marine transportation and port planning, fisheries law and management, international marine policy and law.

## Master of Arts (M.A.)

*Admission requirements:* GRE and bachelor's degree in related science or social science. For international students, minimum paper TOEFL score of 550 or computer score of 213. Full-time applicants are admitted for the fall semester only.

*Program requirements:* thesis and MAF 482, 502, 577, 651; MAF 511 or appropriate oceanography substitute; REN 514 or appropriate resource economics substitute; plus a minimum of 21 elective credits for a total of 45 credits.

## Master of Marine Affairs (M.M.A.)

*Admission requirements:* prior graduate degree or five years of equivalent experience in marine areas. For international students, minimum paper TOEFL score of 550 or computer score of 213. Full-time applicants are admitted for the fall semester only.

*Program requirements:* nonthesis program; REN 514; MAF 577, 589, 651, 511 or appropriate oceanography substitute; plus 15 elective credits for a total of 30 credits; written comprehensive examination.

## M.M.A./J.D. Joint Program between URI and Roger Williams University Law School

*Admission requirements:* students will have to apply and be accepted into each program under the separate admissions requirements currently in effect at each school.

*Program requirements:* The Roger Williams University J.D. program requires 90 credits which can be completed on a full-time basis in three years. The M.M.A. de-

gree at URI requires 30 credits which can be completed on a full-time basis in one year. A student matriculated in the joint program will take some credits in one program which will also help satisfy the overall credit requirements of the other degree program. The effect of these credit transfers would be to reduce the total time needed to complete both degrees from four to three and one-half years. Students in the joint program must complete MAF 511, 577, 589, 651, 652, and REN 514 or their equivalent as part of their 24-credit requirement at URI in addition to six credits at Roger Williams. Roger Williams students must complete the required law school curriculum and may apply nine marine affairs credits toward the J.D.

## Doctor of Philosophy

*Admission requirements:* the Ph.D. program is small and selective. Admission is based on academic merit, research capability, availability of faculty, and match of interests between applicant and faculty. Applicants must have completed work for the master's degree in some related area. GRE, letters of recommendation, writing samples including master's thesis or major research paper, statement of purpose, and interview required.

The statement of purpose shall include a description of the intended research topic and the names of the professors most suited to direct the research. Consult the department Web pages ([www.uri.edu/cels/maf](http://www.uri.edu/cels/maf)) for current research interests of the faculty.

*Program requirements:* students must complete the following required courses or their equivalents (18 credits)—MAF 482, 502, 511, 577, 651; REN 514. Beyond the courses indicated above, Ph.D. candidates are required to complete a minimum of 48 additional credits, of which 24 will be awarded for dissertation research. The course credits earned to meet this requirement will be selected by the student from among 500- and 600-level courses with the approval of the student's Ph.D. committee. Students will have to demonstrate proficiency in research tools, foreign

language(s), and/or statistics as appropriate for the proposed course of study and dissertation. Required capabilities will be determined by the Ph.D. committee.

Upon completion of course work, students will have to pass written and oral comprehensive examinations in major and minor fields of marine affairs. Each student is to write and successfully defend a dissertation of high quality.

## Mathematics

M.S., Ph.D.  
401-874-2709

*Faculty:* Professor Pakula, *chairperson*; Professor Lewis, *director of graduate studies*. Professors Beauregard, Clark, Datta, Finizio, Grove, Kaskosz, Ladas, and Montgomery; Associate Professors Eaton and Merino; Assistant Professors Kulenovic and Wu; Professors Emeriti Driver, Fraleigh, Roxin, Schwartzman, Suryanarayan, and Verma.

### Specializations

Ordinary, functional, partial differential equations, abstract differential equations, difference equations, functional analysis, approximation theory, probability, fluid mechanics, and control theory.

### General Information

Programs of study can be designed for individuals who are employed on a full-time basis. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the doctoral comprehensive examination.

### Master of Science

*Admission requirements:* bachelor's degree with strong undergraduate background in mathematics. Applicants with deficiencies in mathematics may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements.

*Program requirements:* 30 credits (or 24 plus thesis), including at least 18 credits in mathematics of which at least 12 must be

at the 500 level or above. A course requiring a substantial paper involving significant independent study and a written comprehensive examination are required for the nonthesis option. MTH 435 and 513 must be completed with a grade of A or B. Recommended courses include MTH 515, 525, 535, 536, and 562.

### Doctor of Philosophy

*Admission requirements:* same as for master's program.

*Program requirements:* MTH 513, 515, 525, 535, 536, and 562, plus specialized courses and electives. Reading ability (in candidate's specialty and with a dictionary) in one language chosen from French, German, or Russian. A Ph.D. qualifying examination is required of all students admitted without a master's degree in mathematics.

Also see the listing under Applied Mathematical Sciences.

## Mechanical Engineering and Applied Mechanics

M.S., Ph.D.  
401-874-2524

*Faculty:* Professor Shukla, *chairperson and Simon Ostrach professor*; Professor Sadd, *director of graduate studies*. Professors Datseris, Faghri, Ghonem (distinguished engineering professor), Kim, Lessmann, Palm, Taggart, and Zhang; Associate Professors Ibrahim, and Jouaneh; Assistant Professor Meyers; Adjunct Associate Professor Tucker; Adjunct Assistant Professor Gomez; Professor Emeritus White.

### Specializations

*Fluid mechanics:* boundary layers, separated flows, turbulence, particle-flow interactions, flow measurement, computational fluid dynamics, flow in human airways, flow in microgeometrics, biotribology (lubrication, friction, wear), ferrography, flow of drug delivery in human body.

*Robotics and design:* robotics, automation, automated assembly, expert systems, plasma welding and fusion, design optimi-

zation, computer-aided design, precision engineering, manufacturing.

*Solid mechanics:* elasticity, plasticity, continuum mechanics, fracture mechanics, photomechanics, impact mechanics, wave propagation and dynamic geomechanics, computational methods, composite and ceramic materials, micromechanics, non-linear mechanics, waterjet processing, fiber optic sensors, tribology (lubrication, friction, wear).

*Systems and control:* robotics, control systems, microprocessor and digital control, system dynamics, precision engineering, advanced dynamics, vibrations.

*Thermal science:* phase change problems, ice making, microscale convection heat transfer, direct contact heat transfer, direct energy conversion, solar energy, new engine designs, thermal pollution, computational heat transfer.

### General Information and Financial Aid

Programs of study can be designed for individuals who are employed full-time. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the comprehensive exam.

A number of graduate and research assistantships are also available for qualified M.S. and Ph.D. students. Temporary instructorships may be available for highly qualified Ph.D. students.

### Master of Science

*Admission requirements:* B.S. degree in mechanical engineering, applied mechanics, aerospace engineering, or a related field such as engineering science, civil engineering, applied mathematics, or applied physics. Students admitted to the program will be expected to have the equivalent of MCE 372. Students without this background may be required to make up this deficiency with no program credit. GRE required of foreign applicants only.

*Program requirements:* for thesis option, 30 credits exclusive of seminar including six to nine credits of thesis (required of all full-time students) and 21–24 credits of course work; one course in each of the three department core areas from the fol-

lowing selections: fluid mechanics/thermal sciences—MCE 545, 551; solid mechanics—MCE 561, 571; mechanical systems—MCE 563, 564, 566; and MCE 501, 502, graduate seminar (required of all on-campus students). For nonthesis option for part-time students, permission of chairperson; 30 credits exclusive of seminar, including one course outside specialization; one course requiring a substantial paper involving significant independent study; and a comprehensive examination.

### Doctor of Philosophy

*Admission requirements:* master's degree. Exceptional students with a bachelor's degree and superior master's candidates will also be considered. GRE required of foreign applicants only.

*Program requirements:* Ph.D. candidacy review after completion of first year of full-time study (or 9 credits for part-time students). The purpose of this review is to determine the candidate's initial progress toward the doctorate, and it is conducted jointly by the department's graduate committee and student's doctoral committee, evaluating both the student's course work and any beginning research activity. Completion of a minimum of 24 credits of course work beyond the master's degree, exclusive of seminar (48 credits of course work after bachelor's degree); MCE 501, 502, graduate seminar (required of all on-campus students). Comprehensive examination and dissertation.

### Medicinal Chemistry

M.S., Ph.D. (Pharmaceutical Sciences)  
401-874-2776/2362

*Faculty:* Professor Shaikh, *chairperson*. Associate Professor Cho; Assistant Professors King and Parang.

### Specializations

Research activities are focused on the molecular mechanisms of chemical carcinogenesis. Research projects address such questions as how interindividual variation affects the metabolism of hetero-

cyclic amine carcinogens, and how carcinogen-DNA adducts affect DNA replication, ultimately leading to cancer.

### Master of Science

*Admission requirements:* bachelor's degree in pharmacy, chemistry, biochemistry, or allied sciences. GRE for graduates of non-U.S. universities only.

*Program requirements:* ACS placement exam (organic) to determine specific program requirements; one seminar presentation per year; thesis; demonstrated proficiency in physical chemistry or successful completion of BCH 435 with a grade of C or better; 30 credits including six to nine research credits (BMS 599), two credits of BMS 523 or 524, BMS 525, and BMS 530 or 535, BCH 581; three or four of the following courses in consultation with major professor: CHM 427, 520, 521, 522, BMS 597, 598, 691, 697, 698.

### Doctor of Philosophy (Pharmaceutical Sciences)

*Admission requirements:* GRE and master's degree in pharmacy, chemistry, biochemistry, or allied sciences, or bachelor's degree in one of these with evidence of superior ability.

*Program requirements:* all Ph.D. candidates, whether admitted with a bachelor's or master's degree, must pass the Ph.D. qualifying examination. Dissertation; ACS placement examination (organic) to determine specific program requirements; same as master's degree plus the following: both BMS 535 and BMS 530 required; one additional seminar credit; two additional graduate-level courses from BMS or BCH 582; research credits as required; 72 credits total; comprehensive examination, written and oral.

Qualifying examination is required for candidates accepted without the M.S. degree.

### Microbiology

See Cell and Molecular Biology.

### Music

M.M.  
401-874-2431

*Faculty:* Professor Lee, *chairperson*; Professor Livingston, *director of graduate studies*. Professors Dempsey, Kent, Ladewig, and Pollart; Associate Professor Danis; Assistant Professor Conley; Professors Emeriti Gibbs and Rankin.

### Specializations

*Performance:* 12 credits of performance in MUS 510 (minimum of three in a semester) plus MUS 548, 550, 567, 580 (not required for students whose bachelor's degree is from URI), 581, and three credits distributed according to the major performance subject, as follows. For *vocalists*, two credits in MUS 598 and music elective. Vocalists are also tested in foreign language diction and reading. For *pianists*, two credits in MUS 590 or 598 and music elective. For *organists and guitarists*, two credits in MUS 598 and music elective. For *other instrumentalists*, MUS 512 and ensemble elective. All performance candidates must also take a minimum of nine credits of electives from music history and theory/composition (no more than six credits in any one of these two areas), and pass a written comprehensive examination in music history, theory, and the performance major after 15 hours of study have been completed.

*Music education:* MUS 540, 545, 548, 579, 580 (not required for students whose bachelor's degree is from URI), 581, and nine credits in one of the following subject areas. For *performance/essay*, six credits of MUS 510 (2 + 2 + 2 or 3 + 3 credits), 550, and 570. For *conducting*, MUS 511, 512, and 513. For *composition (classical or studio)*, six credits of MUS 510V (2 + 2 + 2 or 3 + 3), 511 or 512 and 552. Credits recommended for studio composition are MUS 510V in jazz arranging and composition, MUS 579 in the jazz/studio area, (e.g., a professional recording studio), 596, or 598J. For *thesis*, at least six credits in MUS 599 and three elective credits. All

music education candidates must also take a minimum of nine credits of electives from music history, theory/composition, and performance (no more than six credits in any one of these three areas, and performance only if it is not already part of the specialization). Students in a thesis program must pass a written qualifying examination before thesis work is begun and defend the thesis in a final oral examination. All other music education candidates must pass a written comprehensive examination in music history, theory, and music education after 15 hours of study have been completed.

The graduate teacher certification program may be taken at the graduate level, alone or in conjunction with the Master of Music degree. It presumes that a candidate has completed the equivalent of the URI Bachelor of Music degree program with courses in music theory, form and analysis, music history, performance, and vocal and instrumental ensembles. Requirements include the MUS 169–179 Performance Classes; MUS 311 and 312 Conducting; MUS 416 Form or MUS 417 Instrumentation and Choral Arranging; MUS 238, MUS 339, 340 Methods, PSY 113, EDC 102, 250, and 312; EDC 484 Student Teaching; MUS 480 Graduate Portfolio in Music (includes Student Teaching Seminar), and the piano proficiency examination. Advanced standing by examination in the above areas is possible. Certain 500-level music education courses may be used as substitutes with permission of the department.

Completion of the teacher certification program can require as many as 36 credits (or more, if remedial studies in music are needed) in addition to what is required for the M.M. degree alone.

### Master of Music

*Admission requirements:* undergraduate major, or the equivalent, in music with a quality point average of 2.50 or above. Applicants for performance as a specialization, or for the performance/essay subspecialization under music education, must pass an audition in their major per-

formance subject on tape or, preferably, in person, before acceptance into a program. Applicants for conducting as a specialization must pass an audition in choral or instrumental conducting, on videotape or, preferably, in person. Applicants for composition as a subspecialization must submit a portfolio of scores and/or tapes of original works.

*Program requirements:* post-admission placement examinations in appropriate areas (music history, theory, composition, and/or music education) determine whether background deficiencies must be made up with no program credit. A minimum of 30 credits is required for graduation. One-half of the program credits must be at the 500 level. (Teacher certification requires additional courses in education at the undergraduate level.)

Students may also take up to six credits from the graduate offerings at Rhode Island College (in Providence). The available courses will be posted in the department each semester. These courses must be approved for program credit prior to registration and must be included in the six-credit maximum for transfer credit and the 12-credit maximum for advanced standing.

### Nursing

M.S., Ph.D.  
401-874-2766

*Faculty:* Associate Professor Joseph, *dean*; Professor Schwartz-Barcott, *director of graduate studies*. Professors Burbank, Kim, McGrath, Miller, and Schmieding; Associate Professors Dufault, Padula, and Yeaw; Assistant Professors Carley, Sullivan, and Viau; Clinical Assistant Professor Coppa.

### Specializations

*For the M.S.:* primary health care, nurse-midwifery, mental health care, education, administration, and advanced clinical practice (with emphasis on critical care, gerontological nursing, or parent-child nursing). *Note:* Applications for advanced clinical practice with concentration in

critical care and parent-child nursing will not be accepted for the 2002–2003 academic year.

*For the Ph.D.:* clinical nursing research in the domains of client, client-nurse interactions, and nursing practice.

### Master of Science

*Admission requirements:* MAT or GRE; a bachelor's degree from an NLN-accredited program with an upper-division major in nursing and an undergraduate course in statistics. For specialization in primary health care, two years of professional nursing practice. Students are required to pass an elementary statistics and an elementary pathophysiology course with a grade of C or better prior to entering the program. There is a challenge exam established for those incoming students who have not taken a pathophysiology course within five years prior to enrolling in the nurse practitioner program. For specialization in nurse midwifery, two years of professional nursing practice, preferably in maternal-infant health nursing, and completion of a course in expanded assessment skills in nursing, equivalent of NUR 503. Students who have not completed upper-division undergraduate nursing course work will be required to make up this deficiency prior to admission. Completed application package with vita must be received by November 15 for spring admission and April 15 for summer and fall admission. Acceptance is based on a full review of the applicant's record and not on any one single component.

*Program requirements:* 41 credits for education, administration, mental health, and clinical practice specializations; 42 credits for primary health care specialization; 46 credits for nurse-midwifery concentration, including 14 credits in core courses (NUR 500, 505, 507, 510, and 520); 9 to 32 credits in the area of specialization (NUR 538, 539, 541, 542 for education; NUR 551, 552 for administration; NUR 511, 512, 513, 514, 590 for mental health care; NUR 503, 504, 531, 532, 533, 534, 535, 582, and 590 for primary health care; NUR 521, 522, 569, and 562 or 564 for clinical practice in critical care and

parent-child nursing; NUR 555, 556, 557, and 558 for clinical practice in gerontology; and NUR 571, 572, 573, 574, 575, 576, 577, 535, and 582 for nurse-midwifery); 16 credits of restricted electives for administration, 12 credits for all other areas of specialization, except for primary health care and nurse-midwifery; a major paper involving significant independent study; and a written comprehensive examination.

*R.N. to M.S. program with an intermediate B.S. degree:* This option allows the completion of three to nine credits of 500-level courses in nursing (NUR 510, 503, 560) during the senior year of the baccalaureate degree. This is contingent upon the concentration in nursing and upon meeting other grade and admission requirements.

### Doctor of Philosophy

*Admission requirements:* GRE (scores at 60th percentile or above are desirable); a bachelor's degree from an NLN-accredited program or its equivalent in nursing and a master's degree in nursing or its equivalent (cumulative averages of 3.00 and 3.30, respectively, desired); two scholarly papers (one theoretical and one empirical) or a master's thesis or equivalent; three recommendations for doctoral study including one by a doctorally prepared person; a statement of purpose indicating goals congruent with those of the program and institution; a vita and a course in statistics including inferential statistics. Acceptance is based on a full review of the applicant's record and not on any one single component.

*Program requirements:* a minimum of 43 credits of course work, including core courses in nursing (19 credits) and cognates (six credits); electives in nursing (nine credits) and in research methods (six credits); free electives (three credits); and 18 credits of doctoral dissertation research, plus written and oral comprehensive examinations in nursing theory, research methods, and one substantive area.

### Nutrition and Food Sciences

M.S., Ph.D. (Biological Sciences)  
Dietetic Internship Certificate Program  
401-874-2253/2467

*Faculty:* Professor Caldwell, *chairperson*; Professor Greene, *director of graduate studies*. Professor Lee; Associate Professors English, Fey-Yensan, and Gerber; Assistant Professor Melanson; Adjunct Associate Professor Sebelia; Adjunct Assistant Professor Pivarnik; Professors Emeriti Constantinides and Rand.

### Food Science

URI's food science graduate program is an interdepartmental program. Admission is based on academic merit, capability to do research and the match of research interests between the applicant and faculty in the areas of specialization listed: marine food product and process development; food structure and rheology; fish mince and surimi technology; seafood flavor, food safety and quality assessment.

### Master of Science

*Admission requirements:* GRE and bachelor's degree in food science. Candidates lacking adequate courses in biological sciences, general chemistry, organic chemistry, biochemistry, physics, statistics, and calculus may be required to make up deficiencies without graduate credit.

*Program requirements:* thesis; two credits of NFS 511; a minimum of three credits in biochemistry, chemistry, or microbiology; NFS 431, 432, 435 and 502. Additional course work will be selected as appropriate for the student's area of specialization in consultation with, and approval of, the major professor. All resident students are required to be continuously registered in NFS 511 or 512, but no more than two credits of NFS 511 can be used for program credit.

### Doctor of Philosophy (Biological Sciences)

*Admission requirements:* GRE and master's degree in food science or related physical or biological science. Either the undergraduate or M.S. degree must be in food science.

*Program requirements:* dissertation; same as master's degree plus BCH 581 and either BCH 521 or 542; a total of three credits in NFS 511, and a research problem (NFS 691, 692) under the supervision of an advisor other than the major professor. All resident students are expected to be continuously registered in NFS 511 or 512, but no more than three credits of NFS 511 can be used for program credit.

### Nutrition

*Specializations:* nutritional status and food behavior of high risk population groups; dietary behavior change to reduce chronic disease risk; nutrition issues related to aging and weight management; diet and exercise; diet and cancer.

### Master of Science

*Admission requirements:* GRE and bachelor's degree in nutrition or dietetics including a course in statistics. Students from other academic areas are encouraged to apply but must have physiology, biochemistry, nutrition, and statistics prior to admission.

*Program requirements:* thesis; two credits of NFS 511; a minimum of three credits in biochemistry, chemistry, microbiology, or physiology; NFS 505, 551, and 552. All resident students are required to be continuously registered in NFS 511 or 512, but no more than two credits of NFS 511 can be used for program credit.

### Doctor of Philosophy (Biological Sciences)

*Admission requirements:* GRE and master's degree in nutrition. Students from other academic areas are encouraged to apply, but must meet entrance requirements for the M.S. program.

*Program requirements:* dissertation, a 500- or 600-level course in statistics/experimental design; a total of three credits in NFS 511, and a research problem (NFS 691/692) under the supervision of an advisor other than the major professor. Students who have not taken the courses required for the M.S. must do so as part of the Ph.D. program. All resident students are expected to be continuously registered in NFS 511 or 512, but no more than three credits of NFS 511 can be used for program credit.

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### Dietetic Internship Certificate Program

*Admission requirements:* students wishing to complete URI's Dietetic Internship Certificate Program (DICP) must be admitted to a graduate degree program at URI. Students may either be admitted to a degree program prior to application to the DICP or may apply to the Department of Nutrition and Food Sciences master's degree program with the internship option. Applicants must have an earned bachelor's degree with completion of the American Dietetic Association (ADA) Didactic Program in Dietetics (DPD) requirements. Applicants must submit an ADA verification form or declaration of intent form signed by their DPD director. In addition, applicants must submit two official transcripts of all academic work, an internship application form, three letters of recommendation using internship recommendation forms, and a personal statement of objectives. Admission is highly competitive and for the fall term only. Final selection of qualified applicants is determined by the national computer matching process. Criteria used for admission include: academic achievement, relevant work experience, personal statement of objectives, and recommendation letters. Enrollment is expected to be limited to eight students. Program information, application forms, and application deadlines can be obtained by calling 401-874-2253.

*Program requirements:* the DICP is an ADA-accredited internship administered by the Department of Nutrition and Food

Sciences. DICP students are governed by the same academic standards as other graduate students. The program consists of nine courses including more than 1,200 hours of supervised practice experience in health care facilities. Students satisfactorily completing the program will receive a certificate qualifying them to take the Dietetic Registration Examination as well as to apply for licensure to practice dietetics in Rhode Island.

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### Ocean Engineering

M.S., Ph.D.  
401-874-6139

*Faculty:* Professor Grilli, *chairperson*; Professor Stepanishen, *director of graduate studies*. Distinguished Engineering Professor Wright; Professors Brown, Hu, Miller, Spaulding, and Tyce; Associate Professor Moran; Assistant Professor Baxter; Research Professor Silva; Adjunct Professors Shonting and Sullivan; Adjunct Associate Professor Uhlman; Adjunct Assistant Professor Vincent.

### Specializations

Ocean instrumentation and seafloor mapping, underwater acoustics and data analysis, marine hydrodynamics and water-wave mechanics, coastal and nearshore processes, marine geomechanics, and coastal and offshore structures.

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### General Information and Financial Aid

Programs of study can be designed for individuals employed full-time. Graduate and research assistantships are available for highly qualified students; some industrial and other fellowships are also available.

### Master of Science

*Admission requirements:* B.S. degree in engineering, physics, applied mathematics or other technical disciplines. Students with a non-engineering background may be required to take undergraduate courses in thermodynamics, fluid mechanics, strength of materials, electrical circuits, and applied mathematics.

*Program requirements:* the thesis option requires 30 credits with a minimum of 12 credits of course work in ocean engineering and nine credits for thesis research. The nonthesis option requires permission of the chairperson and a total of 30 credits with a minimum of 18 credits of course work in ocean engineering, with one course requiring a paper involving significant independent study and a written comprehensive examination. OCE 605 and 606 are required of all full-time students.

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### Doctor of Philosophy

*Admission requirements:* M.S. degree in engineering or equivalent; exceptional students with a Bachelor of Science in engineering will also be considered. All students will be required to complete courses equivalent to those for the M.S. degree in ocean engineering if not included in their master's degree.

*Program requirements:* a total of 42 credits beyond the M.S. degree (or 72 credits beyond the B.S. degree), composed of at least 18 credits of course work and 24 credits of dissertation research. Courses must include one in advanced applied mathematics, one in engineering or oceanography, and a minimum of two in ocean engineering. Qualifying, written, and oral comprehensive examinations are required. OCE 605 and 606 are required of all full-time students.

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### Oceanography

M.O., M.S., Ph.D.  
401-874-6246

*Faculty:* Professor Farmer, *dean*; Professor Wimbush, *associate dean*. Professors Carey, Cornillon, Durbin, D'Hondt, Hargraves, Kester, King, Larson, Leinen, Merrill, Nixon, Oviatt, Quinn, Rahn, Rossby, Rothstein, Schilling, Sigurdsson, Specker, Swift, Tyce, Watts, Wishner, and Yoder; Associate Professors Collie, Ginis, Hara, Hebert, Heikes, Kincaid, Moran, and Spivack; Assistant Professors McNeil, Shen, and D. Smith; Research Professor Smayda; Adjunct Professors Buckley, Donaghay,



Gifford, Kenney, Olsen, Roman, and Sullivan-Watts; Professors Emeriti Jeffries, Knauss, Pilon, Saila, and Sieburth; Associate Professor Emeritus Napora.

### Specializations

Biological, chemical, geological, and physical oceanography.

### Financial Aid

There is a limited number of assistantships for master's and doctoral candidates.

### Master of Oceanography

*Admission requirements:* GRE (aptitude required) and bachelor's degree in natural sciences or engineering. Most applicants are admitted for the fall semester, but admission for the start of the second semester is possible. Approximately 20 students are admitted to the program each academic year. Due to the limited number of students that can be accepted as degree candidates, no application will be considered which shows an undergraduate average of less than B unless there is post baccalaureate work indicating outstanding ability. To ensure full consideration for admission, the complete application packet should be received by January 15.

*Program requirements (total of 30 credits):* OCG 695 (two credits); written comprehensive examination; major paper (three credits); OCG 501, 521, 540, 561; six credits in oceanography or other science departments; three credits in policy, management, economics, or a related field; three credits in statistics, data analysis, or scientific writing.

### Master of Science

*Admission requirements:* GRE (aptitude required, advanced in the applicant's undergraduate major recommended) and bachelor's degree in natural sciences or engineering. Most applicants are admitted for the fall semester, but admission for the start of the second semester is possible. Due to the limited number of students that can be accepted as degree candidates, no application will be considered which shows

an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by January 15.

*Program requirements:* thesis, OCG 695, and participation in a regular ocean research cruise. For specialization in biological and chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, six credits of 500- and 600-level OCG courses outside the geological oceanography discipline (not including OCG 695); for specialization in physical oceanography, OCG 501, 510, and any two of OCG 605, 610, and 613.

### Doctor of Philosophy

*Admission requirements:* GRE (aptitude required, advanced in the applicant's undergraduate major recommended); bachelor's degree in natural sciences or engineering. Most applicants are admitted for the fall semester, but admission for the start of the second semester is possible. Due to the limited number of students that can be accepted as degree candidates, no application will be considered which shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by January 15.

*Program requirements:* comprehensive examination, dissertation, OCG 695, participation in a regular ocean research cruise, six credits of 600-level OCG courses (excluding problems and research courses and OCG 695). For specialization in biological or chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, OCG 540 and any two of OCG 501, 521, and 561; for specialization in physical oceanography, OCG 501, 510, 605, and 613 and any six credits of 500- and 600-level OCG courses outside the physical oceanography discipline. A Ph.D. qualifying examination is required of all doctoral students. This re-

quirement is satisfied by completing, with a grade of B or better, the courses specified for the appropriate discipline.

### Pharmacognosy

M.S., Ph.D. (Pharmaceutical Sciences)  
401-874-2362/2776

*Faculty:* Professor Shaikh, *chairperson*. Professor Shimizu; Assistant Professor Rowley; Adjunct Assistant Professor Omar.

### Specializations

Drug plants, herbal medicine, bio-organic chemistry, combinatorial chemistry, solid phase synthesis, and peptide chemistry. Biosynthesis of drug plant constituents, natural product chemistry including the isolation and structural elucidation of materials of potential medicinal interest, screening of natural products for physiologically active agents including materials from both land and marine sources.

### Master of Science

*Admission requirements:* GRE and bachelor's degree in pharmacy, chemistry, or biology.

*Program requirements:* ACS placement examination (organic) to determine specific program requirements; one seminar presentation per year; thesis; 30 credits including six to nine research credits (BMS 599), two credits of BMS 523 or 524, BMS 525 and BMS 530 or BMS 535, BMS 551, BCH 581; two or three additional graduate courses in consultation with major professor.

### Doctor of Philosophy (Pharmaceutical Sciences)

*Admission requirements:* GRE and master's degree in pharmacy, chemistry, or biology, or bachelor's degree in one of these with evidence of superior ability. Qualifying examination is required for candidates accepted without the master's degree.

*Program requirements:* same as M.S. plus the following—one additional seminar credit; two additional graduate-level BMS

courses including BMS 633; research credits as required; 72 credits total; comprehensive examination, written and oral.

## Pharmacology and Toxicology

M.S., Ph.D. (Pharmaceutical Sciences)  
401-874-2362/2776

*Faculty:* Professor Shaikh, *chairperson*. Professors Chichester, Rodgers and Swonger; Associate Professors Babson, Yan, and Zawia; Assistant Professor King; Adjunct Professors Boekelheide, Kodavanti, and Nagata; Adjunct Associate Professors Barrach, Fisher, Ku, and Munns; Adjunct Assistant Professors Hilliard and Schuler.

### Specializations

This program's research projects explore the mechanisms involved in various disease states and their pharmacological intervention, and mechanisms of toxicology of various environmental agents. Ongoing topics include: effects of hormonal imbalances and antihypertensive agents on cardiac function and metabolism in hypertension; diagnosis and treatment of rheumatoid arthritis; effect of septic shock on drug metabolism; developmental neurotoxicity of environmental agents; hepatotoxicity and nephrotoxicity of heavy metals; interindividual variation in metabolism of heterocyclic amine carcinogens; regulation and genetic heterogeneity of enzymes involved in drug and xenobiotic metabolism; and calcium- and non-calcium mediated pathways of cell death.

### Master of Science

*Admission requirements:* GRE and bachelor's degree in pharmacy, biological sciences, or chemistry.

*Program requirements:* one seminar presentation per year; thesis; demonstrated proficiency in statistics either by course work or examination; 30 credits including six to nine research credits (BMS 599), two credits of BMS 523 or 524, BMS 525 and BMS 530 or BMS 535, BMS 581; three or four courses from the following in consul-

tation with major professor: BMS 544, 546, 572, 641, 642, 644; BCH 582.

### Doctor of Philosophy (Pharmaceutical Sciences)

*Admission requirements:* GRE and bachelor's or master's degree in pharmacy or science.

*Program requirements:* same as M.S. plus the following—both BMS 535 and BMS 530 required; one additional seminar credit; research credits as required; two additional graduate-level courses from BMS or BCH 582; 72 credits total; comprehensive examination, written and oral. Qualifying examination is required of candidates accepted without an M.S. degree.

## Pharmacy Administration

See Applied Pharmaceutical Sciences.

## Physical Education and Exercise Science

M.S.  
401-874-2976

*Faculty:* Professor Lamont, *director of graduate studies*. Professor Manfredi; Associate Professors Ballinger, O'Donnell, and Riebe; Assistant Professor Blissmer; Professor Emerita Bloomquist.

### Specializations

Exercise science—experimental and clinical tracks; teaching and administration; psychosocial perspectives.

### Master of Science

*Admission requirements:* MAT or GRE with B.S. degree in physical education, exercise science or related discipline. An applicant with a degree in an unrelated field who possesses a strong emphasis in the sport sciences may be considered. Completed application packages should be sent to the Director of Graduate Studies, URI Department of Physical Education and Exercise Science, 126 Tootell, and must be

received by April 15 for September admission, or October 15 for January admission. Applications received after April 15 but before July 15 will be reviewed on a space-available basis.

*Program requirements:* for thesis option, 30 credits, including core courses PEX 530, and 599. For nonthesis option, 33 credits, including core courses PEX 530, 591, and a written master's comprehensive examination. Required courses for each concentration include the following—*exercise science experimental track:* EXS 531, 559, and 562; *exercise science clinical track:* EXS 559, 565, 581, and PEX 592; *teaching and administration:* PEX 510, 520, and 550; *psychosocial perspectives:* PEX 578 or EXS 581. Additionally, recommended electives exist for each program concentration.

## Physical Therapy

M.S.  
401-874-5001

*Faculty:* Professor Rowinski, *director*. Associate Professors Agostinucci, Blanpied, and Roush.

URI's physical therapy program is an entry-level Master of Science program that prepares students for the state professional licensure examination. There is an emphasis on the development of clinical skill and research capability through the three-year graduate study plan.

The physical therapy program is located in the Independence Square II facility and has a clinical service and research unit that includes a computerized anatomical study center, BIODEX and KINCOM muscle performance dynamometry, METRECOM postural analysis, electromyography, and kinetic and kinematic analysis systems. SwimEx and Aqua Arc aquatic therapy devices are available for therapeutic and research activities. Research is currently conducted in the treatment and prevention of spine problems, muscular stiffness, and neuromuscular control mechanisms. Also in Independence Square,

the Department of Physical Education and Exercise Science has a weight management clinic; an exercise testing laboratory with treadmill, ECG monitoring and metabolic testing equipment; a biochemistry laboratory; and an electronmicroscopy lab. A fitness and wellness laboratory is located in the Tootell Physical Education Complex.

### Specializations

Research activities are focused on tissue biomechanics, neuromuscular control, muscle performance, and neurological rehabilitation. Clinical therapeutic skill is enhanced by faculty clinical practice and regional internships.

### Master of Science

*Admission requirements:* GRE (aptitude test scores at the 50th percentile or above are desired) and a bachelor's degree with 12 credits of biological sciences (including a minimum of six credits of human anatomy and human physiology); physical sciences (preferably 16 credits, eight in chemistry and eight in physics); six credits of social sciences (including general and developmental psychology); three credits in mathematics (preferably precalculus); three credits in communications (preferably writing or speech); and three credits in statistics. Courses in abnormal psychology, computer science, exercise physiology, and research design are strongly recommended but not required.

A clinical experience with a physical therapist is required. The experience should include observing and aiding a physical therapist in treatment or evaluation procedures. The minimum number of hours recommended for the clinical experience is 30–40 hours of voluntary or paid time. Most successful applicants demonstrate a diversity of clinical experience and a number of hours exceeding the minimum required in a physical therapy setting. The experience may be part of field work study for credit in a health-related discipline. Evidence of such experience should be documented by a recommendation from the physical therapist addressing

the nature and duration of the experience, which should be submitted as part of the application process. Special recommendation forms and a form for the listing of completed prerequisites should be obtained by contacting the physical therapy program. Baccalaureate requirements must be completed prior to final acceptance into the master's program. The completed application package must be received by the second Friday in January. While applications will be reviewed as early as December 15, applicants will be admitted for the fall semester only.

*Program requirements:* a minimum of 83 credits of specified physical therapy course work, including 15 credits of internship. This program is a three-year plan of required course work, with the first two semesters at the 400 and 500 levels (29 credits), followed by four semesters and a summer session of graduate-level course work, including an internship at an affiliated institution between the second and third years. As for all internships, the student may have to pay living expenses for summer internships. Internships and clinical course work of the first year also require immunization for the hepatitis B virus and instruction in HIV precautions, as required by OSHA standards. Immunization is at the student's expense.

Though essentially a nonthesis program, a substantial paper involving significant independent research is required. A course in statistical methods, which includes ANOVA, correlation, and regression analysis, is required prior to or concurrent with the first semester of the second year of the program. All courses involving clinical skill development require skill competency testing via practical examination. All clinical competencies determined necessary by the faculty of the respective course must be demonstrated as adequately learned by the student in these courses for achievement of an adequate scholastic course grade. (See "Scholastic Standing," page 116.) Master's comprehensive examination is also required. Courses required during the first two semesters may be

waived, with an equivalent reduction in credits required for the degree, if acceptable grades have been earned in the course(s) prior to final acceptance into graduate status, and if approved by the program faculty.

### Physics

M.S., Ph.D.  
401-874-2633

*Faculty:* Professor Muller, *chairperson*. Professors Heskett, Kahn, Kaufman, Letcher, Malik, Meyerovich, Nightingale, Northby, Nunes, and Steyerl; Assistant Professor Yoon; Adjunct Professor McCorkle; Adjunct Associate Professors Bozyan and Ruffa; Adjunct Assistant Professor Briere; Professors Emeriti Desjardins, Hartt, and Pickart.

### Specializations

*Acoustics and optics:* underwater acoustics, optical and piezo-electric biosensors.

*Astronomy:* astrometry, low-frequency radio sources and optical counterparts.

*Computational physics:* classical and quantum Monte Carlo methods, large-scale parallel computations, optimization, many-body interactions and invariants, finite-size scaling, recursion method.

*Experimental condensed matter physics:* electronic and structural properties of surfaces and thin films studied via low-energy electron diffraction, Auger electron spectroscopy, X-ray standing wave and photoemission techniques (in-house and at the Brookhaven National Laboratory synchrotron facility); surfaces and interfaces in thin films and multilayers studied via X-ray and neutron reflection and diffraction (in-house and at the National Institute of Standards and Technology reactor facility); epitaxial growth, magnetism in nanoparticles and on surfaces via neutron and X-ray scattering; characterization of electromigration by electrical and optical techniques, Ruthenium backscattering, and scanning tunneling microscopy.

*Experimental low-temperature physics:* atomic cluster beams, quantum liquids.

*Experimental neutron physics:* ultracold neutrons used to study beta-decay, neutron optics (at the Institut Laue-Langevin, Grenoble).

*Nonlinear dynamics and chaos:* turbulence, Hamiltonian chaos, integrability in quantum mechanics.

*Theoretical condensed matter physics:* surface physics, phase transitions and critical phenomena, critical dynamics, superconductivity, quantum transport, nanoscale films and clusters, disordered systems, low-dimensional systems, spin dynamics, Bethe ansatz.

*Theoretical low-temperature physics:* Fermi and Bose quantum liquids, solids and gases; spin-polarized quantum systems.

### Master of Science

*Admission requirements:* GRE and advanced test recommended; bachelor's degree with major in physics preferred.

*Program requirements:* PHY 510, 520, 525, 530, 560, 570, and 580 are required of all students. For both the thesis and the nonthesis options, the student will complete 30 credits, of which no more than six may be below the 500 level. For the nonthesis option, at least one course will require a substantial paper involving significant independent study, and the student must pass a final written and oral examination.

### Doctor of Philosophy

*Admission requirements:* GRE and advanced test recommended; bachelor's degree with major in physics preferred. Master's degree is not required.

*Program requirements:* PHY 510, 520, 525, 530, 570, 580, 610, 625 (or 626), 630, 670, and 680. There is no formal departmental language requirement, although the candidate's committee may require demonstration of language proficiency. Successful completion of a qualifying examination is required of all students.

## Political Science

M.A., M.P.A., M.P.A./M.L.I.S.  
401-874-2183; 401-277-5200

*Faculty:* Professor Moakley, *chairperson*. Professors Hamilton, Hennessey, Juda, Killilea, Petro, Rothstein, Stein, Tyler, and Zucker; Associate Professor Genest; Adjunct Professor Profughi; Adjunct Associate Professor Leazes; Professor Emeritus Leduc.

### Specializations

International relations, comparative politics, American politics, public policy, and public administration.

### Master of Arts

*Admission requirements:* generally, GRE, GMAT, or MAT, and undergraduate credit in basic political science and political theory.

*Program requirements:* a minimum of 30 credits including PSC 553, 580 or 584, and 583 for both thesis and nonthesis options; nonthesis option requires one course including a substantial paper requiring significant independent research and an oral examination in addition to the comprehensive examination.

### Master of Public Administration (M.P.A.)

The Rhode Island Master of Public Administration Program (RIMPA) leads to the M.P.A. degree conferred by the University of Rhode Island. It is a collaborative undertaking, governed and offered by a committee of University faculty that includes adjunct faculty from Rhode Island College. The RIMPA is offered at URI's Providence campus and provides federal, state, city, and nonprofit officials and agencies easy access to its instructional programs and research expertise. In addition to delivering its degree and certificate programs, internships, and workshops, the RIMPA faculty conducts research into the formation and implementation of public policy and the administration of public and nonprofit agencies. Current research areas include public professional ethics, the training of

public managers, water resource management, the governance and financing of nonprofits, state prison administration, the public administration of technology, industrial policy at the state and national levels, and case management in mental health agencies.

*Admission requirements:* generally, based on the applicant's undergraduate academic record; current scores for one of the following exams—GRE, MAT, GMAT. Exam requirement waived for applicants holding an advanced degree from an accredited institution of higher education.

*Program requirements:* nonthesis program; one course including a substantial paper requiring significant independent research; comprehensive examination; internship (may be waived); minimum total of 36 credits including PSC 501, 503, 504, 505, 506, 524, and 573. Competency in computer science and statistics is required and may be demonstrated by completion of a basic course at the undergraduate level. Competence in basic computing skills may be demonstrated by completion of a basic course at the undergraduate level, or, after review by the M.P.A. program director, by professional, worksite training completed by the candidate, or by virtue of the professional responsibilities of an M.P.A. candidate.

Students in the RIMPA program taking elective courses at the participating institutions will be governed by the same regulations effective for courses taken at URI. Under this rule, grades (including failures) for all graduate courses taken at a participating institution will be included in the grade point average and will become part of the student's record.

### M.P.A. and M.L.I.S. Cooperative Program

A cooperative program permits joint enrollment in URI's Master of Public Administration and Master of Library and Information Studies programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to

serve as electives in the other, and for six credits of such course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

**Admission requirements:** GRE and other requirements listed for M.P.A. and M.L.I.S. Applicant must apply and be accepted in both programs. Applications to both programs must indicate M.P.A./M.L.I.S. as the field of specialization.

**Program requirements:** each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

## Psychology

M.S., Ph.D.  
401-874-2193

**Faculty:** Professor Quina, *chairperson*. Professors Berman, Biller, Brady, Cohen, Collyer, Faust, Florin, Grebstein, Harlow, Kulberg, Morokoff, Prochaska, Rossi, Ruggiero, Silverstein, Smith, Stevenson, Valentino, and Velicer; Associate Professors deMesquita, Harris, and Wood; Assistant Professors Bowleg, Boatright-Horowitz, Koonce, Park, and Rogers; Adjunct Professors Abrams, Colby, Gelles, and LaForge; Adjunct Associate Professors Bernon, Fava, Fowler, Johnson, Lobato, Meyer, Mitchell, Monti, and Redding; Adjunct Assistant Professors Arruda, Brown, Erickson, Fitts, Frenzel, Haspel, Johnson, Kirschenbaum, Kotula, Maxwell, Plummer, and Samuels; Professors Emeriti Gross, A. Lott, B. Lott, Merenda, Vosburgh, and Willoughby.

## Specializations

Programs are offered in clinical, experimental, and school psychology. Specializations are offered within each program. The clinical program encourages students to organize their courses so as to foster their developing career needs. Thus, one is encouraged to develop specific interests and competencies in areas such as health psychology, substance abuse, child/clinical, community, neuropsychology, applied methodology, gender issues, and family systems. Students in the school psychology program focus their interests in one or more of the roles and functions of school psychologists emphasized in the program such as assessment, intervention, consultation, prevention, reading and literacy, decision making, early intervention and school readiness, cross-cultural development, and multicultural competence. Students in the experimental program tailor their own program but tend to emphasize one or more of the following areas: research methodology, gender/multicultural issues, health/prevention, child/family/community, and physiological psychology. Additional individual specialties can be developed within each of the program areas.

## Master of Science (School Psychology Only)

**Admission requirements:** GRE, advanced test recommended. Undergraduate major in psychology recommended. Applicants are admitted for the fall semester only. The completed application package must be received by February 1.

**Program requirements:** nonthesis—internship; total of 60 credits with a minimum of 30 for the master's degree plus additional credits for certification as a school psychologist; one course with a major paper involving significant independent research; and a written comprehensive examination.

This program is accredited by NCATE/NASP and NASDTEC, and meets the requirements for certification in Rhode Island.

## Doctor of Philosophy (Clinical, Experimental, and School Psychology)

**Admission requirements:** GRE, advanced test recommended; evidence of research competency. Applicants are admitted for the fall semester only. The completed application package must be received by January 25 for clinical, and by February 1 for experimental and school. Prospective applicants are asked to address initial inquiries concerning the desired specialization to the department. The formal application materials can be obtained from the Graduate School Office, but the completed application package must be sent to the department. Applicants to the clinical and school programs are evaluated on the basis of previous academic achievement, GRE scores, previous life experience, previous applied clinical and research experience, letters of recommendation (three required), personal interview, and projected balance between applicant and program needs.

Due to limited facilities, new admissions to the doctoral programs are limited to a small number per year. Finalists in the school and clinical specialization must participate in a personal interview to complete the evaluation process. Although test scores and cumulative averages are not the sole criteria for admission to the clinical program, those with overall quality point averages of less than 3.00 (on a 4.00 scale), or whose verbal and quantitative GRE scores do not total above 1200, are advised that there is little chance for admission.

**Program requirements:** completion of a minimum of 90 credits (72 plus 18 for dissertation). Research course requirements: a minimum of two courses in statistics (STA/PSY 532, PSY 533) and a research methods course (PSY 611). In addition, all students must complete a multicultural competency requirement, and four courses from among those numbered 600-609. Each of the three program areas (i.e., clinical, experimental, and school) also include specific

research, content, and applications requirements. The research competency requirement may be met by successfully defending a master's thesis or by successfully completing a research competency project under the direction of the major professor. The research competency project option is limited to those who have nonthesis master's degrees in psychology. Students who successfully complete the thesis option will earn a Master of Arts degree in psychology. A Ph.D. qualifying examination is required of all doctoral students entering without the master's degree. This requirement is met by completing four courses from STA/PSY 532, PSY 533, 611, and those numbered 600–609, with a grade of B or better. These courses are usually completed prior to earning 24–30 credits. For students in the applied areas (clinical and school), course work must be completed in each of the following content areas of psychology: biological bases of behavior; cognitive and affective bases; social bases; individual differences; and history and systems of psychology.

The objective of URI's Ph.D. program is to give our students the knowledge and skills they will need to be effective psychologists in their chosen area. Scientific training and research experience as well as knowledge and technical skills are a part of each student's program, but his or her program is individually designed around his or her needs and goals.

Both the clinical and the school psychology programs are accredited by the American Psychological Association. Both programs subscribe to the scientist-practitioner model, and thus course requirements are consistent with maintaining such accreditation. These requirements generally include courses in foundations of psychological science, professional practices, research, and completion of an approved supervised internship. Practicum and individual research projects can be specifically tailored to help the student prepare for the professional role of his or her choice. These programs also have a

strong experiential base, including field activity in each year. Students are expected to be involved in research for a substantial portion of their program.

The department emphasizes a close working relationship between faculty and students. No single theoretical or philosophical model is espoused.

## Spanish

M.A.  
401-874-5911

*Faculty:* Professor Morello, *chairperson*; Associate Professor White, *director of graduate studies*. Professors Gitlitz, Grandin, Manteiga, and Trubiano; Associate Professor Morin; Assistant Professor delosHeros.

### Specializations

The Master of Arts in Spanish is designed for those who wish to perfect their undergraduate achievement in the general area of Hispanic studies, including language mastery and understanding of literature in the total context of civilization and culture. The literary production of Spain, Spanish America, and the Spanish-speaking peoples of the United States will be studied. Any one of these areas could provide a field for specialization.

### Master of Arts

*Admission requirements:* undergraduate major in Spanish or equivalent, including 12 credits in Spanish or Hispanic-American literature. Qualified students may be admitted with less than 12 credits but must make them up without graduate credit.

*Program requirements:* all work carried out in Spanish. For thesis option, 30 credits including six thesis research credits. For nonthesis option, 30 credits. All candidates must pass a written comprehensive examination and an oral comprehensive examination. Course work may be completed on campus or through the URI summer study program in Salamanca, Spain, or a combination of both.

## Speech-Language Pathology and Audiology

M.S.  
401-874-5969

*Faculty:* Professor Singer, *chairperson*. Associate Professors Kovarsky and Preece; Assistant Professors Karow and Kim.

### Specializations

Audiology and speech-language pathology programs, accredited by the American Speech Language Hearing Association.

### Master of Science

*Admission requirements:* GRE or MAT scores are required for admission. Strong consideration will be given to the cumulative GPA. In addition, performance within a communicative disorders major or prerequisite courses will be viewed as a particularly important criteria for admission. The completed application package must be received by October 15 for spring admission and March 1 for fall admission.

*Program requirements:* M.S. in speech-language pathology with thesis and nonthesis options (54 credits). Required courses consist of the following: CMD 454, 493, 504, 551, 560, 561, 564, 569, 570, 582, 584, 585, and 592. Nonthesis option (54 credits): written comprehensive examination; CMD 504; 40 credits in speech-language pathology and eight credits in audiology. Thesis option (54 credits): thesis; CMD 504; 34 credits in speech-language pathology and eight credits in audiology.

*M.S. in audiology with thesis and nonthesis options (54 credits).* Required courses consist of the following: CMD 454, 493, 504, 551, 552, 553, 555, 556, 557, 570, and 572. Nonthesis option (54 credits): written comprehensive examination; CMD 504; 40 credits in audiology and eight credits in speech-language pathology. Thesis option (54 credits): thesis; CMD 504; 34 credits in audiology and eight credits in speech-language pathology.

Although course work in communicative disorders is not a requirement for graduate admissions, students who have not taken the undergraduate requirements must take 21 credits in communicative disorders (CMD 372, 373, 374, 375, 376, 377, and 465, or their equivalents) before beginning graduate-level courses. Any required undergraduate courses not completed prior to admission would be added to the 54-credit graduate program.

Students who have not taken the undergraduate courses may enroll as a post-baccalaureate (nonmatriculating) student to begin fulfilling these requirements prior to admission. Completion of these courses does not assure admission into the graduate program.

For either the M.S. program in speech-language pathology or audiology, students must also complete sufficient directed observations and supervised clock hours of practicum to satisfy the requirements of the American Speech-Language Hearing Association. These practicum experiences are offered through both the Kingston and Providence campuses. Because program requirements in both speech-language pathology and audiology include clinical responsibilities, the average length of time to complete any of the programs is two academic years and one summer.

### **Accelerated Bachelor's-Master's Degree Program in Speech-Language Pathology or Audiology**

URI undergraduate communicative disorders majors who have met requirements for early acceptance in the graduate program of either speech-language pathology or audiology may follow a special sequence of graduate-level course work and clinical practicum during their senior year (see page 100 for more information). If eligible, following the award of the Bachelor of Science degree in communicative disorders, students may complete a 30-semester-hour master's degree (rather than the usual 54-semester-hour master's degree) in one year and a summer of full-time graduate study. This option, which requires careful sequencing of senior and

graduate course work, is not available to students from other undergraduate institutions nor to students who elect part-time graduate study prior to completion of the fifth year.

*Admission requirements:* GRE or MAT, URI sixth-semester standing in communicative disorders with all major requirements completed and 28 elective credits remaining; a 3.00 cumulative quality point average and 3.20 in the major through the fifth semester; and two letters of recommendation from URI communicative disorders faculty.

*Program requirements:* for students who have taken the specified 25 credits (16 of which must be at the 500 level) of communicative disorders course work in the senior year to complete the bachelor's degree in communicative disorders, 30 credits of course work in the fifth year (postbaccalaureate) at the 400 or 500 level. Specific course requirements are as stated in the regular two-year master's program.

### **Statistics**

M.S.  
401-874-2701

*Faculty:* Associate Professor Kowalski, *chairperson*; Professor Hanumara, *section head*. Professor Heltshe; Assistant Professor Gonzalez; Adjunct Associate Professor Ting; Professor Emeritus Carney.

### **Specializations**

Experimental design, sampling, ecological statistics and biostatistics, statistical computation, simulation, multivariate analysis, nonparametric methods, classification and discrimination, analysis of variance, bootstrap and jackknife estimation, sequential methods, spatial statistics.

### **Master of Science**

*Admission requirements:* bachelor's degree including the equivalent of MTH 141, 142; MTH 243; MTH 215; CSC 201; STA 409, 412. GRE; advanced test in mathematics or undergraduate field is desirable.

Programs of study can be designed for individuals who are employed full-time.

*Thesis option program requirements:* a minimum of 24 credits (exclusive of thesis) including MTH 451, 452, either STA 501 or 502, and at least nine additional credits selected from STA 500, 501, 502, 520, 541, 542, 550, 592, 611.

*Nonthesis option program requirements:* 33 credits distributed as follows—1) MTH 451, 452, and either STA 501 or 502; 2) at least nine credits selected from STA 500, 501, 502, 520, 541, 550, 592, 611; 3) at least six of the remaining credits must be at the 500 level or above (exclusive of STA 591); 4) the above course work must include at least one course that requires a substantial paper involving significant independent study; and 5) written comprehensive examination.

### **Doctor of Philosophy**

See Applied Mathematical Sciences.

### **Teacher Certification**

401-874-4068

Students who did not obtain Rhode Island teacher certification as part of their undergraduate studies may do so by being admitted to a certification program or a master's degree program with a certification option and satisfactorily completing a prescribed set of courses in the appropriate fields. Applicants for elementary or one of the secondary fields described below must apply as master's degree students. Applicants for early childhood education, music education, or school library media certification may indicate the specific TCP program code on the application forms and submit two official transcripts of all prior academic work, showing receipt of the bachelor's degree, plus a personal statement of objectives and two letters of recommendation.

Applications for the education department programs are reviewed by each individual specialization (see below); admission is competitive. Admissions into the elementary and secondary education pro-

gram occur once a year. Typically the deadline for admission is early February. Interested students should contact the Office of Teacher Education, or the contact person in their area, for information on admission deadlines; they may also visit the School of Education's Web site at [www.soe.uri.edu/](http://www.soe.uri.edu/). If space becomes available for any particular program, completed applications for that program may be reviewed subsequently.

A test of basic skills is required prior to action on the application. For all other teacher education programs, the basic skills requirement consists of a mathematics test administered by the School of Education each spring. Please contact the appropriate department(s) in the following list for additional information relative to this requirement. An interview is also required of all applicants. Students admitted to the TCP program are governed by the same academic standards as matriculated graduate students.

Further information can be obtained from the Office of Teacher Education at 401-874-5930 or from the following areas of specialization:

*Early Childhood Education (510):* Professor Diane Horm-Wingerd, Chairperson, Department of Human Development and Family Studies, 401-874-2150

*Elementary Education (525):* Assistant Professor Sandy Jean Hicks, School of Education, 401-874-5976

*Secondary Education (525)*

English: School of Education, 401-874-7418

Mathematics: Assistant Professor Francine Roy, School of Education, 401-874-4149

Science: Professor William Croasdale, School of Education, 401-874-4161

Social Studies: Professor David Byrd, School of Education, 401-874-5484

Languages: Associate Professor JoAnne Hammadou, Department of Modern and Classical Languages and Literatures, 401-874-4712

*Music Education (070):* Professor Carolyn Livingston, Department of Music, 401-874-2763

*School Library Media (940):* Associate Professor Cheryl McCarthy, Graduate School of Library and Information Studies, 401-874-2878

## Textiles, Fashion Merchandising, and Design

M.S.  
401-874-4574

*Faculty:* Professor Bide, *chairperson*. Professor Welters; Associate Professors Harps-Logan and Ordoñez; Assistant Professor Hannel; Adjunct Associate Professor Warner; Adjunct Assistant Professors Mohanty and Moreno; Professors Emeriti Emery and Higa; Associate Professor Emerita Helms.

The department offers a wide variety of individualized programs in close association with other departments (Art, Chemistry, Education, History, Human Development and Family Studies, Marketing) and with various social science fields.

### Specializations

Textile science, historic textiles and costume, textile conservation, cultural analysis, and fashion merchandising.

### Master of Science

*Admission requirements:* GRE and a bachelor's degree with adequate preparation for the proposed area of study.

*Program requirements:* for thesis option, completion of a minimum of 30 credits, including six credits of thesis research. For nonthesis option, completion of a minimum of 33 credits, half of which must be TMD courses numbered 500 or above, including at least one course that requires a substantial paper involving significant independent study, and written comprehensive examinations. TMD 510 is a requirement for all students. For the textile science specialization, TMD 503 and 510; a statistics course. For the specializations focusing on historic textiles and costume, textile conservation, and cultural analysis, TMD 510, 520, 500 or 524, and a supervised internship (TMD 530, two to four credits); half of the remaining elective credits must be from TMD courses numbered 500 or above. A minimum of nine

credits is required to achieve a competency level in an allied field such as art history, history, or anthropology; this may result in a program of more than 30 credits. The committee may elect to waive this requirement if the candidate has adequate preparation in the allied field as an undergraduate. Candidates lacking undergraduate courses in textile science and historic costume may be required to make up deficiencies without graduate credit. For the fashion merchandising specialization, TMD 510 and 524; six credits to be selected from TMD 432, 442, or 452; a statistics course. Candidates lacking undergraduate courses in textile science and fashion merchandising may be required to make up deficiencies without graduate credit.



# COURSES OF INSTRUCTION

**U**ndergraduate and graduate courses offered at the University of Rhode Island are listed on the following pages by subject in alphabetical order. If any subject cannot be located readily, refer to the index.

Courses numbered 001–099 are pre-freshman and special undergraduate courses, and do not carry bachelor's degree credit. Those numbered 100–299 are lower-division undergraduate courses, and those numbered 300–399 are upper-division undergraduate courses. The 400-level courses are generally limited to juniors and seniors majoring in that field, but are open to other advanced undergraduates and graduate students with permission.

The 500-level courses are graduate courses with a bachelor's degree usually a prerequisite, but qualified seniors and honors students are admitted with permission. These courses should make up the majority of course work for students working toward a master's degree. Courses at the 600 level are advanced graduate courses. The 900-level courses are special types of graduate courses for which no degree credit is given. They include courses offered to remedy deficiencies as well as workshops, institutes, and courses offered one time only by visiting faculty.

Courses with two numbers—e.g., ACC 201, 202—indicate a year's sequence; the first course is either a prerequisite for the second, or at least the two cannot be taken in reverse order without special permission. Parentheses after a course number enclose either the old course number or, in cases of multiple listings, the departments and numbers under which the course is also offered. The Arabic numeral indicates the credit hours, and distribution of class hours each week is in parentheses. *S/U* credit signifies a course in which only satisfactory or unsatisfactory grades are given.



For information on semester offerings or instructors, see the *Schedule of Courses* or contact the department. The *Schedule* is issued by Registration and Records immediately before the early registration period for each semester and again at least two weeks before the first week of classes. It lists the specific courses to be offered that semester with the meeting time, location, and instructor assigned for the section.

Courses that meet general education requirements are designated with a letter in parentheses indicating the appropriate group, as follows:

- (A) Fine Arts and Literature
- (F) Foreign Language and Culture
- (L) Letters
- (C) English Communication (General)
- (Cw) English Communication (Written)
- (M) Mathematics
- (N) Natural Sciences
- (S) Social Sciences

## Accounting (ACC)

Dean: Professor Mazzeo

**201, 202 Elementary Accounting I, II (3 each)**  
201: Basic concepts and systems used in financial accounting for business organizations. 202: Basic techniques and systems used by management accountants in budgeting, cost accounting, cost analysis, and control. (Lec. 3)

**311, 312 Intermediate Accounting I, II (3 each)**  
311: Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. 312: Continuation including investments, liabilities, financial statements, application of funds, cash flow, and price-level impacts. (Lec. 3) Pre: 202.

**321 Cost Accounting (3)**  
Cost and managerial accounting systems and concepts including cost allocation, actual and standard cost systems, cost and profit planning, and control systems. (Lec. 3)

**371, 372 Directed Study in Accounting (1–3 each)**  
Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**415 Accounting Computer Systems (3)**  
Accounting information systems and use of the computer for decision making; emphasis on sources of information and employment of analytical tools in solving accounting problems. (Lec. 3) Pre: 312, 321, or permission of instructor.

**431 Advanced Accounting (3)**  
Accounting principles and policies for governmental and nonprofit organizations, multinational and multidivisional organizations, partnerships, and other complex organizational structures. (Lec. 3) Pre: 312.

**443 Federal Tax Accounting (3)**  
Federal laws, regulations, and other authorities affecting taxation of individuals. (Lec. 3) Pre: 202.

**461 Auditing (3)**  
Auditing standards, procedures, programs, working papers, and internal control. (Lec. 3) Pre: 312.

**493 Internship in Accounting (3)**  
Approved, supervised work experience with participation in accounting and problem solving related to accounting. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the Department of Accounting. May be repeated for credit. Not for graduate credit. *S/U* only.

**535 Advanced Problems in Accounting (3)**

General and specialized accounting problems that constitute the subject matter of C.P.A. examinations. (Lec. 3) Pre: 431.

**544 Taxation of Corporations and Shareholders (3)**

Examination of the tax laws affecting corporations and shareholders. Includes law governing corporate formation, liquidating and nonliquidating distributions, reorganizations, taxes on corporation accumulations, and planning of transactions for tax compliance and minimization. (Lec. 3) Pre: 443 or permission of instructor.

**562 Advanced Auditing (3)**

Statements on auditing standards, auditing electronic systems, auditor's reports, statistical sampling in auditing, regulations of SEC, and cases in auditing. (Lec. 3) Pre: 461.

**618 Current Accounting Theory (3)**

Critical examination of accounting theory and practice to develop research techniques with emphasis on financial accounting. (Lec. 3) Pre: 311 and 312.

**619 Current Accounting Theory (3)**

Critical examination of accounting theory and practice with respect to cost and managerial accounting. (Lec. 3) Pre: 321.

**631 International Accounting (3)**

Covers interpretation of international financial statements, focusing on foreign currency exchange, comparative accounting principles and disclosures, and audit reports. Uses actual financial statements in case analyses. (Lec. 3) Pre: 610 or permission of instructor.

**641 Federal Taxation Seminar (3)**

Examination and discussion of the laws and rationale affecting the federal taxation of individuals as well as an introduction to research in taxation. (Lec. 3) Pre: 311 and graduate standing in accounting.

**643 Federal Taxes and Business Decisions (3)**

The course focuses on tax law and its effect on business decisions. Cases are employed and primary emphasis is on income tax planning, although estate and gift taxes are explored. (Lec. 3) Pre: 610.

**644 Partnership, Estate, and Gift Taxation (3)**

Examination of the tax laws affecting partnerships, estates, and gifts. Includes income and wealth taxation with an emphasis on tax avoidance through effective planning. (Lec. 3) Pre: 641.

**646 Seminar in Tax Research, Policy, and Planning (3)**

Examination of the methodology of tax research, the principles and procedures involved in tax planning, and the procedures involved in dealing with the IRS. (Seminar) Pre: 641 or equivalent.

**661 Seminar in Auditing (3)**

Readings and discussions on auditing standards, procedures, programs, working papers, internal control, and current auditing topics. (Seminar) Pre: 311 and graduate standing in accounting.

**681 Accounting Policy (3)**

Development of accounting policy with respect to managerial planning and control. Emphasis on analytical evaluation of cases with major research project. (Lec. 3) Pre: 618, graduate standing, and completion of all foundation courses.

**Course Codes**

ACC Accounting	EVS Environmental Sciences	MCE Mechanical Engineering and Applied Mechanics
ADE Adult and Extension Education	EXS Exercise Science	MTC Medical Technology
AAF African and African-American Studies	FLM Film Studies	MIC Microbiology
AFS Aquaculture and Fisheries Science	FIN Finance	MSC Military Science
AVS Animal and Veterinary Science	FRN French	MUS Music
APG Anthropology	GEG Geography	NRS Natural Resources Science
AMS Applied Mathematical Sciences	GEO Geosciences	NES New England Studies
APS Applied Pharmaceutical Sciences	GER German	NUR Nursing
ART Art	GRK Greek	NFS Nutrition and Food Sciences
ARH Art History	HSA Health Services Administration	OCE Ocean Engineering
AST Astronomy	HBW Hebrew	OCG Oceanography
BGS Bachelor of General Studies	HIS History	PHC Pharmacy
BCH Biochemistry	HPR Honors Program	PHP Pharmacy Practice
BIO Biological Sciences	HDF Human Development and Family Studies	PHL Philosophy
BMS Biomedical Sciences	HSS Human Science and Services	PEX Physical Education and Exercise Science
BUS Business	IME Industrial and Manufacturing Engineering	PHT Physical Therapy
BAC Business Analysis and Computing	INS Insurance	PHY Physics
BSL Business Law	ITR Internships and Experiential Education	PLS Plant Sciences
CHE Chemical Engineering	ITL Italian	PSC Political Science
CHM Chemistry	JPN Japanese	POR Portuguese
CHN Chinese	JOR Journalism	PLA Prior Learning Assessment
CVE Civil and Environmental Engineering	LRS Labor Relations and Human Resources	PSY Psychology
CLA Classics	LAR Landscape Architecture	PRS Public Relations
COM Communication Studies	LAN Languages	RLS Religious Studies
CMD Communicative Disorders	LAT Latin	RDE Resource Development Education
CPL Community Planning	LAS Latin American Studies	REN Resource Economics
CSV Community Service	LET Letters	RUS Russian
CLS Comparative Literature Studies	LIB Library	SOC Sociology
CSC Computer Science	LSC Library and Information Studies	SPA Spanish
DHY Dental Hygiene	LIN Linguistics	STA Statistics
ECN Economics	MBA Master's in Business Administration	TMD Textiles, Fashion Merchandising, and Design
EDC Education	MGT Management	THE Theatre
EDP Ph.D. in Education	MIS Management Information Systems	URI University of Rhode Island Freshman Seminar
ELE Electrical Engineering	MSI Management Science	WMS Women's Studies
EGR Engineering	MAF Marine Affairs	WRT Writing
ENG English	MKT Marketing	
ELS English Language Studies	MTH Mathematics	
ENT Entomology		

**691, 692 Directed Study in Accounting (1–3 each)**

Advanced work under the supervision of a member and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**693 Internship in Accounting (3)**

Participation in management and/or problem solving under the supervision and guidance of a sponsoring agency with evaluation by the College of Business Administration. (Practicum) Pre: proposal acceptance by the College of Business Administration, no previous internship credit, graduate standing. S/U credit.

## Adult and Extension Education (ADE)

**491, 492 Special Problems in Adult Education (1–3 each)**

Specialized problems in adult and extension education. Seminars or supervised individual projects. (Independent Study) 491 topics: A, B, C are service learning. Pre: permission of instructor.

## African and African-American Studies (AAF)

Director: Professor Hamilton

**150 Introduction to Afro-American History**  
See History 150.

**201 Introduction to African American Studies (3)**  
Interdisciplinary exploration of some of the pivotal themes and issues in the study of peoples of African descent. (Lec. 3)

**202 Introduction to Afro-American Culture (3)**  
Interdisciplinary survey of the social origins of Afro-American culture. (Lec. 3)

**247 Introduction to Literature of the African Diaspora**  
See English 247.

**248 African American Literature from 1900 to Present**  
See English 248.

**290 African American Women: Service, Community and Self (3)**  
Introductory course on African American women. Focuses on the idea of African American women's service which has been a constant theme and necessity for the African American community in North America. (Lec. 3)

**300 Special Topics in African and Afro-American Studies (3)**  
Selected contemporary topics, problems, issues, and individuals from the field of African and Afro-American studies. The topical format allows in-depth analysis of some significant aspect of the

African and Afro-American experience. (Lec. 3)  
Topic: Conditions for Community Service is service learning. Pre: 201 or 202 or permission of instructor. May be repeated with different topic.

**330 (or ARH 330) African American Art in Context: A Cultural and Historical Survey I (3)**  
Examines African American art and artifacts of the 17th, 18th, and 19th centuries, highlighting the dominant attitudes as well as the political and social realities of the times. (Lec. 3)

**331 (or ARH 331) The African American Artist in Context: A Cultural and Historical Survey II (3)**  
Examines art and artists, the trends, philosophical attitudes, political realities, social influences, and artistic styles of 20th century African American artists. (Lec. 3)

**333 Oral Interpretation of Black Literature**  
See Communication Studies 333.

**352 Black Images in Film (3)**  
Exploration of the cultural, economic, political, and ideological motivations behind the standard representation of people of the African Diaspora in cinema in the U.S. and other areas of the world, while examining film as a genre with a vocabulary and idiom of its own. (Lec. 3)

**359 History of Slavery in America**  
See History 359.

**360 (or ENG 360) Africana Folk Life (3)**  
Examination of the process of creativity, context, and form in the oral literary tradition of peoples of African descent throughout the world. (Lec. 3) In alternate years. Next offered fall 2003.

**362 African American Literary Genres other than the Short Story and Novel**  
See English 362.

**363 African American Fiction**  
See English 363.

**364 Contemporary African Literature**  
See English 364.

**366 Black Political Thought During the Age of Civil Rights and Black Power**  
See History 366.

**367 Contemporary African-American Political Thought**  
See History 367.

**380 (or PSC 380) Civil Rights Movement (3)**  
Major transformations in American life brought about by the civil rights movement in law, in social relations, in the role of government. Focus on the period between 1954 and 1968 in an effort to identify and evaluate the changes in government and civil society which occurred during this period. (Lec. 3)

**372 African Americans and the Legal System (3)**  
Focus on constitutional changes designed to influence the political status of African Americans in the United States. (Lec. 3)

**388 History of Sub-Saharan Africa**  
See History 388.

**390 Directed Study or Research (3)**  
Directed study arranged to meet the needs of individual students who desire independent work and to promote collective research efforts in African and Afro-American Studies. (Independent Study) Pre: permission of director.

**399 Introduction to Multicultural Psychology**  
See Psychology 399.

**408 African Government and Politics**  
See Political Science 408.

**410 (or PSC 410) Issues in African Development (3)**  
A seminar focusing on the dynamics of African development, including political and social change, economic development, education, urbanization, rural development, environmental management, labor and business, industrialization, and technology transfer. (Seminar) Pre: APG 313 or PSC 201 or HIS 388 or permission of instructor.

**415 (or PSC 415) Dynamics of Social Change in the Caribbean (3)**  
Exploration of the slave trade and the origins of Africans and people of African descent in the Caribbean. Emphasis on political and economic relations with the U.S. and the impact of modernization. (Lec. 3) Not for graduate credit.

**466 Urban Problems**  
See Political Science 466.

**474 Literature of the African Diaspora**  
See English 474.

**498 Senior Seminar in African and Afro-American Studies (3)**  
Study of a particular issue of the experience of Blacks in the diaspora from an interdisciplinary perspective. Subject or theme will change yearly. Pre: 150, 201, 202, senior standing, or permission of instructor. Not for graduate credit.

## Animal and Veterinary Science (AVS)

Chairperson: Professor Rice

**101 Introduction to Animal Science (3)**  
Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition, and diseases of domestic animals and poultry; geographic distribution and marketing of animal products. (Lec. 3) (N)

**102 Introduction to Animal Science Laboratory (1)**  
Laboratory and demonstrations of principles of the animal industries. (Lab. 2) Pre: credit or concurrent enrollment in 101.

**104 Animal Management Techniques (2)**  
Lecture and laboratory in the handling skills needed to maintain animal comfort and productivity. (Lec. 1, Lab. 2) Pre: 101 and 102.

**110 Freshman Seminar in Animal and Veterinary Science (1)**  
Overview of the animal and veterinary sciences and the fields they encompass. Student projects, presentations, and field trips. (Seminar) Pre: 101. Open only to freshmen.

**201 Companion Animal Management (3)**  
Nutrition, reproduction, behavior, and management of companion animals. (Lec. 3) Pre: 101.

**212 Feeds and Feeding (3)**  
Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. (Lec. 2, Lab. 2)

**301, 302 Seminar in Animal and Veterinary Science (1 each)**  
Readings, reports, lectures, and discussions on scientific topics in animal and veterinary science. Subject matter adapted to student and faculty interest. (Seminar) Pre: junior or senior standing.

**323 Animal Management I (3)**  
Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep, and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. (Lec. 3)

**324 Animal Management II (3)**  
Principles of the care and management of domesticated monogastric animals including swine, horses, and poultry. Emphasis will be given to modern production methods. Participation in field trips required. (Lec. 3)

**331 Anatomy and Physiology (3)**  
Fundamentals of anatomy and physiology of domesticated animals. (Lec. 3) Pre: BIO 113 and junior standing.

**332 Animal Diseases (3)**  
Specific diseases of avian and mammalian species; etiology, symptoms, and control. (Lec. 3) Pre: 331.

**333 Anatomy and Physiology Laboratory (1)**  
The fundamental anatomy of domestic animals is examined. Demonstrations of physiological principles are performed. Laboratory techniques for screening physiological function in vivo and in vitro are covered. (Lab. 2) Pre: credit or concurrent enrollment in 331.

**343 Behavior of Domestic Animals (3)**  
Examination of the basis for, and exhibition and control of, behavioral patterns of domestic animals. (Lec. 3) Pre: 101.

**365 Laboratory Animal Technology (3)**  
Management of laboratory animals with emphasis on animal biology, breeding, care, health, research use, and animal welfare. (Lec. 2, Lab. 2) Pre: BIO 113.

**372 Introductory Endocrinology (3)**  
Morphology and physiology of endocrine glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. (Lec. 3) Pre: BIO 104B or 113.

**390 Wildlife and Human Disease**  
See Entomology 390.

**399 Animal Science Internship (1-6)**  
Options in various professional experience programs involving the animal and veterinary sciences. (Practicum) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. S/U credit.

**412 Animal Nutrition (3)**  
Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation, and work. (Lec. 3) Pre: 212, organic chemistry, and junior standing.

**420 Animal Breeding and Genetics (3)**  
Scientific methods for the genetic improvement of domesticated animals. Genetic variation and expected results of different types of selection and mating systems. (Lec. 3) Pre: ASP 352 or equivalent. In alternate years.

**462 Laboratory Animal Techniques (3)**  
Laboratory animal applications in clinical studies; research in nutrition, endocrinology, and other selected topics. (Lec. 1, Lab. 4) Pre: 365.

**463 Animal Veterinary Technology (3)**  
Theory and application of animal health practices required of paraprofessionals in a veterinary practice. The role of the veterinary assistant in a modern clinical practice will be emphasized. (Lec. 2, Lab. 3) Pre: 331.

**472 Physiology of Reproduction (3)**  
Anatomy and physiology of reproduction, with emphasis on domestic animals. Current experimentation in endocrinology of reproduction is surveyed. (Lec. 2, Lab. 2) Pre: BIO 113.

**491, 492 Special Projects (1-3 each)**  
Work that meets the individual needs of students in animal and veterinary science. (Independent Study)

**500 Instructional Methods in Life Sciences (2)**  
Organization and development of instructional material and teaching methods for graduate teaching assistants in the life sciences. Emphasis on practice presentation in classroom/lab setting. (Lec. 2) Pre: graduate standing or permission of instructor for senior undergraduate.

**508 Seminar in Biological Literature**  
See Biological Sciences 508.

**591, 592 Research Problems (3 each)**  
Research problems to meet individual needs of graduate and honors students in the fields of animal breeding, nutrition, or physiology and food science. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**  
Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Anthropology (APG)

*Chairperson:* Professor Mederer

**200 (or LIN 200) Language and Culture (3)**  
Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. (Lec. 3) (S)

**201 Human Origins (3)**  
The biocultural evolution of humans; review of the fossil record. (Lec. 3) (N)

**202 The Prehistoric Ages (3)**  
Archaeological perspectives on human biological and cultural development from the Old Stone Age to the Iron Age. Emphasizes prehistoric lifeways, emergence of food production, earliest Old and New World civilizations. (Lec. 3) (S)

**203 Cultural Anthropology (3)**  
Anthropological approaches to the study of peoples and cultures around the world. (Lec. 3) (S)

**220 Introduction to the Study of Language**  
See Linguistics 220.

**300 Human Fossil Record (4)**  
Investigation into the biocultural evolution of hominids over the last 15 million years; course based on evidence from fossil bones, teeth, and paleoecological reconstruction. (Lec. 3, Lab. 2) Pre: 201 or 202 or permission of instructor.

**302 Methods of Anthropological Inquiry (3)**  
Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field work and use of cross-cultural data. (Lec. 3) Pre: 203 or permission of instructor.

**303 New World Prehistory (3)**

Reconstruction of American Indian cultural history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. (Lec. 3) (F)

**309 Anthropology of Religion (3)**

Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. (Lec. 3)

**310 Topics in Anthropology (1-3)**

Analytical study of selected topics in anthropology. Subjects will vary according to the expertise and availability of instructors. (Lec. 1-3) Pre: one anthropology course or permission of instructor. May be repeated with different topic.

**311 Native North Americans (3)**

Survey of selected North American Indian groups from before European contact to the present. Modern reservation life; influence of the federal government on Indian life. (Lec. 3) (F)

**313 Peoples of Africa (3)**

Studies of Africa's peoples and cultures from prehistoric times to the present. (Lec. 3) (F)

**315 Cultures and Societies of Latin America (3)**

Contemporary cultures and societies; emphasis on adjustment of the people to modern social and economic changes. (Lec. 3) Pre: 203 or permission of instructor. (F)

**317 Archaeological Method and Theory (3)**

Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. (Lec. 3) In alternate years. Next offered 2002-03.

**319 Cultural Behavior and Environment (3)**

Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. (Lec. 3) In alternate years. Next offered 2003-04. (S)

**320 Sociolinguistics**

See Linguistics 320.

**322 Anthropology of Modernization (3)**

Patterns and processes of contemporary social and cultural change among traditional people. (Lec. 3) Pre: 203 or permission of instructor.

**325 The Irish (3)**

An examination of the beliefs, customs, and social institutions which comprise Irish life, at home and abroad. (Lec. 3) (F)

**327 History of Physical Anthropology (3)**

An examination of some classic works in human evolution and physical anthropology. Designed to

provide an understanding of the philosophical and historical development of biological anthropology. (Lec. 3) (L)

**350 Human Variation (3)**

Anthropological investigation into the nature and causes of human biological diversity with emphasis on living populations. Students enrolled in this course will serve as a sample for measuring human variation. (Lec. 3) Pre: any 200-level anthropology course or permission of instructor.

**400 Evolution, Culture, and Human Disease (3)**

Investigation of the dynamic interrelationships between culture, human disease, and evolution. Encompasses study of living peoples as well as our fossil and prehistoric ancestors, and includes infectious and chronic diseases. (Lec. 3) Pre: introductory physical anthropology, biology, or zoology, or permission of instructor.

**401 History of Anthropological Theory (3)**

Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski, and Radcliffe-Brown. (Seminar) Pre: 203 or permission of instructor.

**405 (or PSY 405) Psychological Anthropology (3)**

Study of human behavior in different cultures employing psychological concepts and theories. (Lec. 3) Pre: 203 or permission of instructor.

**412 Primate Behavior and Organization (3)**

Investigation of the naturalistic behavior and organization of nonhuman primates, and the relationship of primate data to anthropology. (Lec. 3) Pre: 201 or permission of instructor.

**413 (or MAF 413) Peoples of the Sea (3)**

Examination of human sociocultural adaptation to the seas. (Lec. 3) Pre: 203 or MAF 100. Open only to juniors, seniors, and graduate students.

**427 Unity of Anthropology (3)**

Survey of recent advances in the subfields of anthropology. Designed to help majors appreciate the unity of anthropology in an age of specialization. (Seminar) Pre: junior or senior standing.

**470 Problems in Anthropology (3)**

Self-guided study and research, seminar, or individual program. (Independent Study) Pre: permission of chairperson.

**Applied Mathematical Sciences (AMS)****699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Applied Pharmaceutical Sciences (APS)**

*Chairperson:* Professor Needham

**314 Physical Pharmacy and Pharmaceutical Calculations (3)**

Physicochemical properties of drug molecules and their effect on formulation and manufacturing of various dosage forms. An emphasis on necessary pharmaceutical calculations. (Lec. 3) Pre: third-year standing or permission of instructor.

**315 Biopharmaceutics (2)**

Applications of kinetics to dissolution, absorption, and other biopharmaceutical processes. Bioavailability and generic equivalence. Regulatory aspects of biopharmaceutics including special populations. (Lec. 2) Pre: third-year standing or permission of instructor.

**316 Pharmacy Law and Ethics (3)**

Basic principles of law and ethics as applied to federal, state and local acts, regulation, and practices encountered in professional practice. Specific attention to liabilities of pharmacists in decisions; actions involving sale of medicinals, poisons, narcotics. (Lec. 2. Rec. 1) Pre: third-year standing or permission of instructor.

**318 Pharmacy Technology Laboratory (1)**

Prescription processing and compounding techniques for pharmaceutical dosage forms. (Lab. 3) Pre: third-year standing or permission of instructor.

**324 Pharmaceutical Technology (3)**

A review of the methods of manufacture and evaluation of drug delivery systems. (Lec. 3) Pre: third-year standing or permission of instructor.

**352 Personal Cosmetics (3)**

Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. (Lec. 2, Lab. 3) Pre: 350.

**403 Pharmacokinetics I (3)**

Pharmacokinetics of drug distribution, metabolism, and elimination. Compartmental models, pharmacokinetic modeling, development of dosage regimens. (Lec. 3) Pre: fifth-year standing or permission of instructor.

**404 (or PHP 404) Pharmacokinetics II (3)**

Applied pharmacokinetics; therapeutic drug monitoring, individualization of doses. (Lec. 3) Pre: fifth-year standing or permission of instructor.

**406 Pharmacy Retailing (3)**

Effect of economic trends and marketing changes on the retail distribution of pharmaceuticals and allied products, particularly as they affect the professional practice of pharmacy. (Lec. 3) Pre: permission of chairperson. Not for graduate credit.

**411 (or PHP 411 or STA 411) Biostatistics II (3)**

An overview of statistical methods used in performing research in pharmacotherapeutics and pharmaco-epidemiology. Emphasis on understanding both common study designs and the output from statistical analysis of data obtained from these studies. (Lec. 3) Pre: fourth-year standing or permission of instructor.

**440 Public Health Practicum in Infectious Disease Control**

See Microbiology 440.

**453 Drug Marketing Principles (2)**

Modern methods of merchandising, agencies involved in marketing drug products; their functions, particularly as they affect the community pharmacy phase of professional practice. (Lec. 2) Pre: fifth-year standing, ECN 201, or permission of chairperson. Not for graduate credit.

**480 Prepaid Drug Plans (3)**

Institutional relationships involved in the prescribing, dispensing, and prepayment of drugs. Problems of interference with pharmaceutical or medical practice arising from different types of prepayment plans. Actual experience, laws, and court decisions, abuse and controls. (Lec. 3) Pre: 349 and 453, or equivalent. Not for graduate credit.

**497, 498 Special Problems (1–3 each)**

Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson.

**503 Health Systems I (2)**

Introduction to the principles of financial analysis, personal management, pharmaceutical marketing, organizational behavior, inventory control, and health policy. Principles as they relate to health care delivery with an emphasis on planning systems. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**504 Health Systems II (3)**

Analysis and interpretation of the health care delivery system from the perspectives of organizational structure and program analysis. Emphasis on pharmacoeconomic aspects of quality of life issues, outcome measurements, reimbursement systems, and drug utilization evaluation. (Lec. 3) Pre: fifth-year standing or permission of instructor.

**515 (or PHP 515) Pharmacy Practice Laboratory I (1)**

Simulated practice sessions designed to develop the delivery of pharmaceutical care, including prescription processing, use of patient profiles, communication with patients and health care professionals, pharmaco-epidemiology, and physical assessment. (Lab. 3) Pre: fifth-year standing or permission of instructor.

**516 (or PHP 516) Pharmacy Practice Laboratory II (1)**

Simulated practice sessions designed to develop the delivery of pharmaceutical care, including prescription processing, use of patient profiles, communication with patients and health care professionals, pharmaco-epidemiology, and physical assessment. (Lab. 3) Pre: fifth-year standing or permission of instructor.

**530 Fundamentals of Cosmetic Science (3)**

Study of the fundamentals of the function and behavior of skin, hair, and nails and their reactivity to cosmetic raw materials. Properties of cosmetic ingredients will also be addressed. (Lec. 3) Pre: permission of instructor.

**531 Basic Research in Cosmetic Science (2)**

Laboratory exercises in the form of individual projects designed to provide an understanding of the basic properties and behavior of skin, hair, and nails. Assessment of cosmetic product performance and the basic properties of cosmetic ingredients. (Lab.) Pre: permission of instructor.

**532 Cosmetic Product Formulation (2)**

Provides a basic understanding of cosmetic products, technology, and quality control; improves formulation skills with a particular emphasis on the application of new technological developments in cosmetic preparation. (Lab. 2) Pre: permission of instructor.

**533 Behavioral Skills in Pharmacy (3)**

Communication skills, behavioral aspects of illness, and the social and ethical considerations of clinical pharmacy. (Lec. 3) Pre: graduate standing or permission of instructor.

**535 Pharmacokinetics (3)**

The principles and application of clinical pharmacokinetics for advanced pharmacy students. Developing, modifying, and evaluating dosage regimens. (Lec. 3)

**540 Principles, Methods, and Applications of Epidemiology (3)**

An introduction to epidemiology, the study of health and disease in populations. Epidemiologic methods and research design for conducting and interpreting health research. (Lec. 3) Pre: STA 307 or permission of instructor.

**550 Pharmacoeconomics (3)**

The application of epidemiologic principles to the study of drug effects in human populations. (Lec. 3) Pre: 540 or permission of instructor.

**570 Case Studies in Pharmacy Law (3)**

Case studies and a detailed analysis of the FDC, Controlled Substances Act, and health insurance laws. (Lec. 3) Pre: 351.

**571 Biotechnology Product Evaluation and Development**

See Medical Technology 571.

**580 Pharmacoeconomic Analysis (3)**

Introduction to methodologic approaches utilized in economic evaluation of drug use and therapy in community and managed care settings, and clinical trials, including the FDA approval process and liability issues. (Lec. 3) Pre: STA 307 of equivalent, or permission of instructor. In alternate years.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**621 Manufacturing Pharmacy I (2)**

Theory and practice in the manufacture of pharmaceuticals and the principles of operation of the equipment used for their production. (Lec. 2) In alternate years.

**622 Manufacturing Pharmacy II (3)**

Theories applied to the manufacture of pharmaceuticals with an emphasis on formulation considerations and principles of operation of equipment used for their production. (Lec. 3) Pre: 621. In alternate years.

**623 Manufacturing Pharmacy Laboratory (2)**

Practical application of the principles of all aspects of dose-form manufacture, including an emphasis on good manufacturing practices. (Lab.) Pre: credit or concurrent enrollment in 622.

**631 Advanced Physical Pharmacy (4)**

Theory and application of physical chemical principles to problems in pharmaceutical research, with emphasis on methods by which properties of new medicinal agents are determined. (Lec. 4) Pre: permission of instructor.

**633 Advanced Physical Pharmacy Laboratory (1)**

Laboratory exercises dealing with the physical-chemical principles used in the evaluation of pharmaceutical substances. (Lab. 4) Pre: permission of instructor.

**640 Epidemiologic Methods for the Health Sciences (2)**

A focus on quantitative methods used in epidemiologic and health-related research. Students will learn to analyze and interpret data from large-scale observational studies and will be exposed to problematic situations in research design and data analysis. (Lec. 3) Pre: 540, STA 412, or permission of instructor.

**651, 652 Health Care Systems I, II (3 each)**

Arrangements for utilizing pharmaceutical resources in public and private systems of health care in the United States and other countries. Variations in quality and distribution of care among socioeconomic

nomic groups. (Lec. 3) Pre: 480 and STA 308 or 409, or equivalent. In alternate years.

### 660 Industrial Project (Pharmaceutics) (3)

A research project directed by the major professor on a topic in industrial pharmacy. A report must be submitted to the department faculty. The project will normally be conducted off campus. (Lab.) Pre: graduate standing in pharmaceutics.

### 670 Advanced Pharmacokinetics (2)

Application of classical compartmental and noncompartmental analyses to drug absorption and disposition in linear and nonlinear systems. (Lec. 2) Pre: 535 or permission of instructor.

### 680 The Legal Environment in Health Administration (3)

Application of specialized statutory and regulatory provisions in federal and state law to the delivery of health care. (Lec. 3) Pre: graduate standing.

### 693, 694 Seminar (1 each)

Seminar discussions including presentation of papers on selected topics in pharmacy. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 2 credits for M.S. candidates. May be repeated for a maximum of 5 credits for Ph.D. candidates.

### 697, 698 Research in Applied Pharmaceutical Sciences (1–3 each)

Literature survey, laboratory work, and a detailed research report on one or more assigned topics in pharmacy. (Independent Study)

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Aquaculture and Fisheries Science (AFS)

*Chairperson:* Professor Rice

### 101 (ASP) Freshman Inquiry into Fisheries and Aquaculture

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in fisheries and aquaculture. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

### 102 Introductory Aquaculture (3)

Aquaculture and its historical development worldwide, its contribution to food supply, non-food species, methods of production, environmental and ecological considerations, culture practices employed for selected species, selective breeding, feeding, disease, processing and marketing. (Lec. 3)

### 120 Introduction to Fisheries (2)

Introduction to international fishery issues, practices, patterns, and public policy based on readings and discussion in a tutorial setting. Concurrent registration in 121 required. (Lec. 2)

### 121 Introduction to Fisheries Laboratory (1)

Introduction to local fisheries and selected nearshore fishery ecosystems; exposure to use and operation of exemplary fishing and sampling gears in local fresh waters and estuaries. Concurrent registration in 120 required. (Lab. 3)

### 201 Shellfish Aquaculture (3)

Culture of marine and freshwater mollusks. Emphasis on life history, biological requirements, culture practices, and economic importance of major species used for human food or shell products. (Lec. 2, Lab. 3) Pre: 102 and one semester of general chemistry.

### 210 (FST) Introduction to the Marine Environment (3)

Introduction to estuarine, coastal, and oceanic environments; physical and biological processes affecting basins, bottoms, water properties, marine life, and the atmosphere. (Lec. 3)

### 211 (FST) Introduction to the Marine Environment Laboratory (3)

Laboratory exercises on the marine environment. Unit conversions, measuring physical features and times, chart work and positioning problems, measuring and processing physical marine parameters, beach and submerged landscape profiling. (Lab. 2)

### 270 (MRD) Basic Scuba Diving in Science and Technology (3)

Rigorous introduction to scuba diving including equipment, diving physics, no-decompression and decompression diving, basic skills, and safety. Emphasis on development of basic knowledge and skills appropriate for a diving scientist or technician. Open Water Diver Certification by the National Association of Underwater Instructors is provided. (Lec. 2, Lab. 3) Pre: scuba diving physical examination and demonstration of strong swimming skills.

### 290 (MRD) Small Boats: Their Equipment and Operation (3)

Principles and practices of vessel operation, from outboard skiffs to small trawlers. Basic nomenclature, navigation, and shiphandling. Rigging and working gear used in marine resource development. (Lec. 2, Lab. 3)

### 315 (FST) Living Aquatic Resources (3)

Survey of major aquatic resource groups; life histories, distribution, and exploitation of representative finfishes, mollusks, and crustacea in major fisheries ecosystems; management practices and patterns of fisheries development. (Lec. 3) Pre: 210 and BIO

113 or 101 or at least one semester of general animal biology.

### 316 (FST) Living Aquatic Resources Laboratory (1)

Study of representative organisms of major resource groups; finfish taxonomy, anatomy, and osteology; exemplary mollusks and crustacea; introduction to larval fishes and fish age estimation; character analysis. (Lab. 3) Pre: concurrent registration in 315. Offered in fall of odd-numbered years.

### 321 (FST) World Fishing Methods (3)

Survey of the fish-catching methods of the world; methods of fish detection; development of the basic techniques used in fishing gear construction and maintenance. (Lec. 3) Pre: 210 or permission of instructor.

### 341 (FST) Marine Propulsion Systems (4)

Detailed study of marine propulsion systems including gasoline, diesel, and steam. Emphasis on the principles and practices of construction, operation, maintenance, and testing. (Lec. 3, Lab. 3)

### 342 (FST) Marine Auxiliary Systems (4)

Detailed study of ship's auxiliary systems, including AC and DC electrical generating and distribution systems, the application of hydraulics to operate deck machinery and steering systems, and refrigeration systems used aboard ship. (Lec. 3, Lab. 3)

### 343 (FST) 343 Vessel Repair and Maintenance (3)

In-depth study of the design, construction, and repair of vessels made of wood, fiberglass, and metal. Emphasis on the use of each material, its comparative cost, and good maintenance techniques. (Lec. 2, Lab. 3)

### 352 (ASP) General Genetics

See Plant Sciences 352.

### 355 (ASP) Genetics Laboratory

See Plant Sciences 355.

### 390 (MRD) Vessel Operations (3)

Vessel operations in commercial applications including commercial fishing, dive boat, and recreational fishing. Preparation for U.S. Coast Guard license examination. (Lec. 2, Lab. 3) Pre: 290 or permission of instructor.

### 391, 392 (FST) Special Problems and Independent Study (1–3 each)

Special work to meet individual needs of students in various fields of fisheries and marine technology. (Independent Study)

### 400 (ASP) Diseases of Cultured Fish (3)

Nature, causes, diagnosis, and spread of diseases limiting piscine freshwater and marine aquaculture projects. Emphasis on prevention, control, and treatment of more common diseases affecting hatchery management. (Lec. 3) Pre: 281; BIO 201 or AVS 331.

**401 (ASP) Pathobiology (3)**

Mechanisms and causes of disease in homeothermic and poikilothermic vertebrates. Cell death, inflammation, infection, metabolic disorders, and neoplasia in relation to fish, reptiles, birds, and mammals. Effects of disease at the cellular, tissue, organ, and organismal levels with a medical orientation. (Lec. 3) Pre: BIO 201 or AVS 331.

**415 (FST) Fishery Science (3)**

Biology of aquatic resource animals, fisheries mensuration and assessment, fisheries ecology, fishing methods, aquatic resource management and conservation, fish and shellfish farming. (Lec. 3) Pre: 315 and college mathematics; concurrent registration in 416.

**416 (FST) Fishery Science Laboratory (1)**

Practices and techniques of fisheries science. Field exercises in local model estuary and lake ecosystems; sampling methods; enumerating and documenting collections; measuring and reporting environmental attributes; estimating population parameters. (Lab. 2) Pre: concurrent registration in 415.

**421 (FST) Design of Fish Capture Systems (3)**

Detailed study of the design considerations and methods of construction of specific representative commercial and scientific sampling fish capture gear. Full-scale and model nets are designed, constructed, and tested. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor.

**425 Aquaculture and the Environment (3)**

Impacts of aquaculture practices on the environment, including habitat alteration, release of drugs and chemicals, and interaction of cultured and wild organisms. Methods to reduce or eliminate those impacts: modeling, siting and monitoring of aquaculture facilities; use of polyculture and water reuse systems. (Lec. 3) Pre: 281.

**432 Marine Finfish Aquaculture (3)**

Culture of non-salmonid marine fish worldwide, with emphasis on the hatchery phase. Broodstock, larval rearing, live and formulated feeds, grow-out systems, stock enhancement. Requires student project on facility design. Pre: 281.

**433 (MRD) Research Diving Methods (3)**

Underwater methods used to assess biological, physical, chemical, and geological characteristics of estuarine and coastal environments are presented and used to investigate seasonal changes in these parameters in the Narragansett Bay environment. (Lec. 2, Lab. 3) Pre: scuba certification and permission of instructor.

**476 (ASP) Genetics of Fish (3)**

Modes of inheritance found in fish including chromosome number, polyploidy, sex determination, and hybridization. Heritabilities, methods of selec-

tion, and mating systems used in the development of fish suited for intensive culture. (Lec. 3) Pre: 352.

**481 (ASP) Shellfish Aquaculture Laboratory (2)**

Detailed study of hatchery, nursery, and grow-out techniques for the production of bivalve mollusks. Culture of phytoplankton, conditioning of broodstock, spawning, larviculture, settlement, metamorphosis, nursery and grow-out methods. (Lab. 6) Pre: 381 or permission of instructor. Offered fall of odd-numbered years.

**483 (ASP) Salmonid Aquaculture (3)**

Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting, and transport. (Lec. 2, Lab. 2) Pre: 281 or equivalent.

**486 (ASP) Applied Physiology of Fish (3)**

Functions of the organ systems of fish, regulation of physiological functions and environmental interactions. Emphasis on the teleosts. (Lec. 3) Pre: BIO 341 or equivalent.

**491, 492 (ASP) Special Projects (1–3 each)**

Work that meets the individual needs of students in aquaculture. (Independent Study)

**501, 502 (ASP) Seminar (1 each)**

Preparation and presentation of scientific papers on selected subjects in animal pathology and virology. (Seminar)

**508 (ASP) Seminar in Biological Literature**

See Biological Sciences 508.

**516 (FST) Early Life History of Aquatic Resource Animals (3)**

Biology and ecology of juvenile and planktonic commercially important species; dynamics of reproduction, fecundity, growth, distribution, and behavior as modulated by the physical environment; identification, enumeration, and sampling. (Lec. 2, Lab. 3) Pre: 415 and STA 308.

**521 (FST) Evaluation of Fish Capture System (3)**

Evaluation of fish capture system behavior and performance using empirical, theoretical, model scaling, and statistical analysis techniques. Field and laboratory measurement procedures. (Lec. 2, Lab. 3) Pre: 421 or permission of instructor.

**531 (FST) Fisheries Stock Assessment (3)**

A quantitative approach to describing the processes of fish growth and mortality, the estimation of stock size, the prediction of stock yield and management practices. Spreadsheets and other micro-computer applications will be used for analysis and modeling. (Lec. 2, Lab. 3) Pre: 415, STA 409 or permission of instructor.

**532 (ASP) Experimental Design**

See Statistics 532.

**534 (ASP) (or MIC 534) Animal Virology (3)**

Basic properties, classification, and evolution of animal viruses. Individual agents are studied in detail. (Lec. 3) Pre: MIC 432, 533, or permission of chairperson.

**536 (ASP) (or MIC 536) Virology Laboratory (2)**

Methods employed in diagnosis and for the investigation of the biological, physical, and chemical properties of animal viruses. (Lab. 6) Pre: credit or concurrent enrollment in 534.

**538 (ASP) (or MIC 538) Epidemiology of Viral and Rickettsial Diseases (2)**

Principles of epidemiology. Interrelationships of host, environment, and agent in viral and rickettsial diseases. (Lec. 2) Pre: credit or concurrent enrollment in 534. In alternate years.

**555, 556 (ASP) Pathology Rotation (3 each)**

Applied anatomical and clinical pathology of aquatic animals including necropsy duty and/or clinical hematology, chemistry, microbiology, parasitology. Attendance at weekly histopathology seminar and research/case report required. (Lab. 6) Pre: one course in histology or BIO 327, MIC 432, or permission of instructor. In alternate years.

**581 (ASP) Current Topics in Molluscan Aquaculture (3)**

Review and critical analysis of recent literature within the field of molluscan biology with emphasis on application to mariculture techniques. Student presentation of selected topics and field trips to state-of-the-art mariculture facilities. (Lec. 3) Pre: graduate standing or senior standing with permission of instructor.

**584 (ASP) Advanced Aquaculture Systems (3)**

Development of design criteria, operational analysis, and management of selected species in water reuse systems. (Lec. 2, Lab. 2) In alternate years.

**586 (ASP) Fish Nutrition (3)**

Digestion and metabolism of carbohydrate, protein, and lipids by fish. Role of vitamins and minerals in metabolism and associative nutritional diseases resulting from deficiencies. Inadvertent toxic factors in fish feeds. (Lec. 3) Pre: AVS 412 and CHM 228 or equivalent. In alternate years.

**591, 592 (ASP) Special Projects (1–3 each)**

Research projects in animal pathology, virology, and aquaculture. (Independent Study) Pre: graduate standing or permission of chairperson.

**930 (ASP) Workshop in Aquaculture Topics for Teachers (0–3)**

Designed especially for teachers of science. Basic topics in aquaculture from an advanced or pedagogical perspective. Pre: teacher certification.



## Art (ART)

*Chairperson:* Professor Roworth

### 002 Sophomore Review (0)

Presentation by majors of a broad selection of their previous college-level work for review by faculty. (Studio) Pre: 101, 103, 207, and ARH 120.

### 101 Two-Dimensional Studio (3)

Exploration of principles of visual organization relating primarily to formulations on the two-dimensional surface by means of fundamental studies and assignments in studio techniques. (Studio 6) (A)

### 103 Three-Dimensional Studio (3)

Introduction to problems in three-dimensional organization. Observations from objects with discussion and application to simple mold and casting techniques. Introduction to the use of basic materials, clay, plaster, and wood. (Studio 6) (A)

### 203 Color (3)

Visual perception of color and manipulation of light as they pertain to two- or three-dimensional formulations. (Studio 6) (A)

### 204 Computer Design (3)

An introduction to various computer design and imaging programs including paint-type, object-oriented, and page layout software. Readings, discussions, and critiques emphasize conceptual understanding of digital media and their roles in the larger cultural context. (Studio 6)

### 207 Drawing I (3)

Visual perception and observation, using nature structures, drawing from models, still life, and landscape; exercises in basic drawing techniques and principles. (Studio 6) (A)

### 208 Drawing II (3)

Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. (Studio 6) Pre: 207.

### 213 Photography I (3)

Introduction to photography, exploration of related techniques using light-sensitive materials. (Studio 6)

### 215 Video and Filmmaking I (3)

Introduction to basic filmmaking and video techniques and theories of moving images. Emphasis on film and video as artistic media. Required projects and readings. (Studio 6) May be repeated for a maximum of 6 credits with permission of instructor. May be taken once for General Education credit (A)

### 221 Painting I (3)

Techniques of painting, utilizing as reference the natural and man-made environments. Traditional and contemporary materials. (Studio 6) Pre: 101 and 207.

### 231 Printmaking I (3)

Introduction to intaglio and lithographic processes, with an emphasis on image development and workshop procedures. (Studio 6) Pre: 101 or 207 or permission of instructor. (A)

### 233 Relief Printing and Typography I (3)

Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in typesetting and layout. (Studio 6) Pre: 101 or permission of chairperson. (A)

### 243 Sculpture I (3)

Formation of three-dimensional forms employing basic sculptural materials and techniques. Basic media, emphasis on form, material, and structural means in studio practice. (Studio 6) Pre: 103 or permission of instructor.

### 300 Art Gallery Internship (3)

Curatorial responsibilities taught through hands-on experience in exhibition programs including: exhibition research, production of interpretive texts and lectures, art object preparation, registration, and installation. (Practicum) Pre: junior standing and permission of instructor and chairperson. S/U only.

### 301 Projects in Studio (3)

Studio projects under guidance of instructor selected by student (Independent Study) Pre: permission of chairperson and instructor.

### 303 Topics in Studio (3)

Selected topics based on particular materials, techniques, or thematic premises. Topics and semesters to be announced. (Studio 6) Pre: art major status, or permission of instructor or chairperson. May be repeated for credit with permission of instructor and chairperson. Fall 2002: Design for Electronic Media. Spring 2003: Graphic Design.

### 304 Introduction to Computer Art (3)

Introduction to using the microcomputer to create final works or as an aid in producing works in traditional media. (Studio 6) Pre: junior or senior standing in the art studio program. Pre: 204.

### 305 Photographic Alternatives (3)

Topics emphasize possibilities in photographic themes and techniques, including alternative processes, collotype, and studio practice. (Studio 6) Pre: 213 and permission of instructor. May be repeated with permission of instructor and chairperson.

### 307 Art Studio Internship (3 or 6)

Work in an institution, agency, or organization supervised by an art professional and a studio faculty member. Activities, expectations, performance assessments, hours, and credits determined through prior consultation. (Practicum) Limit of 6 credits

toward graduation. Pre: junior standing in the B.A. or B.F.A. studio program and permission of chairperson. S/U only.

### 309 Drawing III (3)

Further problems in drawing with emphasis on independent work. (Studio 6) Pre: 208 or permission of instructor.

### 314 Photography II (3)

Continuation of 213. (Studio 6) Pre: 213. May be repeated for credit with permission of instructor.

### 316 Video and Filmmaking II (3)

Continuation of 215 with added emphasis on sound. Required projects and reading. (Studio 6) Pre: 215. May be repeated once for credit with permission of instructor.

### 322 Painting II (3)

Continuation of 221. (Studio 6) Pre: 221. May be repeated for credit with permission of instructor.

### 332 Printmaking II (3)

Continuation of 231 with introduction to color lithography. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. (Studio 6) Pre: 231.

### 334 Relief Printing and Typography II (3)

Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters, and other visual material incorporating type and print in a contemporary idiom. (Studio 6) Pre: 233 or permission of chairperson. May be repeated for credit with permission of instructor.

### 337 Printmaking III (3)

Semi-independent work in printmaking media. Introduction of aluminum plate and photo-lithography. (Studio 6) Pre: 332.

### 344 Sculpture II (3)

Continuation of 243. (Studio 6) Pre: 243 or permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor.

### 404 Computer Art II (3)

Independent work in electronic media under the supervision of instructor. (Studio 6) Pre: 304 and permission of instructor and department chair. May be repeated for credit with permission of instructor and department chair.

### 405, 406 Studio Seminar (3 each)

Intensive self-directed work under guidance of instructor. Periodic critiques and discussion of work of all participants. (Studio 6) Pre: Limited to senior B.A. and B.F.A. Studio Art Majors with 3.0 or above as studio course average and permission of instructor.

**410 (310) Drawing IV (3)**

Independent work in drawing under the supervision of instructor. (Studio 6) Pre: 309 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**415 Photography III (3)**

Independent work in photography under the supervision of instructor. (Studio 6) Pre: 314 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**417 Video and Filmmaking III (3)**

Independent work in video and filmmaking under the supervision of instructor. (Studio 6) Pre: 316 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**435 Relief Printing and Typography III (3)**

Independent work in relief printing and typography under the supervision of instructor. (Studio 6) Pre: 334 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**438 (338) Printmaking IV (3)**

Independent work in printmaking media under supervision of instructor. (Studio 6) Pre: 337 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**445 Sculpture III (3)**

Independent work in sculpture under the supervision of instructor. (Studio 6) Pre: 344 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**501 Graduate Studio Seminar (3)**

Intensive independent studio work under guidance of instructors. Periodic critiques and discussions related to work of all participants in the course. (Studio 6) Pre: 48 credits in studio.

**Art History (ARH)**

*Chairperson:* Professor Roworth

**120 Introduction to Art (3)**

Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. (Lec. 3) (A)

**184 Architecture: An Introduction (3)**

An introduction to the theory and history of architecture, considering aesthetic issues, social function, and the impact of technological change. Material will be presented in slide lectures and field visits to architectural sites. (Lec. 3) (A)

**251 Introduction to History of Art (3)**

The development of architecture, sculpture, and painting from prehistory through the Middle Ages. (Lec. 3) (A)

**252 Introduction to History of Art (3)**

The development of architecture, sculpture, and painting from the early Renaissance to the present. (Lec. 3) (A)

**284 Introductory Topics in Architectural History (3)**

Consideration of the history of architecture and city planning through surveys of selected periods and themes. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor. May be taken once for General Education credit. (A)

**285 Women in Art (3)**

Survey of images of women throughout the history of art in Europe and America; investigation of the roles of women as patrons and artists in art history. (Lec. 3) (A)

**300 Art History Internship (3-6)**

Internship in an approved professional organization (such as museum, gallery, preservation society, auction house). Specific details determined in consultation with faculty supervisor and off-campus liaison, and approved by chairperson. (Practicum) May be taken in one semester or repeated for a maximum of 6 credits. S/U only.

**330 African American Art in Context: A Cultural and Historical Survey I**

See African and African American Studies 330. Next offered spring 2003.

**331 The African American Artist in Context: A Cultural and Historical Survey II**

See African and African American Studies 331.

**354 The Art of Greece and Rome (3)**

Developments in architecture, painting, and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. (Lec. 3) Pre: 251 or permission of chairperson. (F)

**356 Medieval Art (3)**

Painting, sculpture, architecture, and minor arts of the Middle Ages from 500 to 1400 in Western Europe. (Lec. 3) Pre: 251 or permission of chairperson. (F)

**359 Baroque Art (3)**

Developments in painting, sculpture, and architecture in Italy and northern Europe from 1600 to 1750. (Lec. 3) Pre: 251 or 252 or permission of instructor. (A) (F)

**363 Modern Art: Nineteenth and Twentieth Centuries (3)**

A survey of trends in the visual arts over the last two centuries with emphasis on defining a "modern" aesthetic. Painting, sculpture, performance, conceptual, and related arts will be discussed. (Lec. 3) Pre: 251 or 252 or permission of instructor. (F)

**364 American Art (3)**

Painting, sculpture, and architecture from their origins in the seventeenth century to the present; emphasis on the nineteenth century. (Lec. 3) Pre: 251 or 252. (A)

**365 Renaissance Art (3)**

Painting, sculpture, and architecture of Italy and northern Europe from 1400 to 1600. (Lec. 3) Pre: 251 or 252 or permission of instructor. (F)

**371, 372 Projects in Art History I, II (3 each)**

Directed study in art history under guidance of instructor selected by student. The student may select a different instructor for 371 and 372. (Independent Study) Pre: permission of chairperson and instructor.

**374 Topics in Film (3)**

Explores the social, historical, and aesthetic development of the cinema from 1895 to the present. Lectures (3 hours) and required film screenings. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor. (A)

**375 Topics in the History of Photography (3)**

Explores the social, historical, and aesthetic development of photography from 1826 to the present. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor.

**376 History of Animation (3)**

Traces the development of animation from the pre-history of animation to the present. (Lec. 3) Pre: 251, 252, or permission of instructor.

**377 The History of Experimental Film (3)**

Traces the development of experimental cinema in the context of modern art. (Lec. 3) Pre: 251, 252, or permission of instructor. Next offered fall 2002.

**380 Topics in Art and Architectural History (3)**

Selected topics, themes, and issues in the history of the visual arts. (Lec. 3) Pre: 251 or 252 or permission of instructor. May be repeated with a different topic for maximum of 6 credits.

**461 Topics in Methods, Theory, and Criticism (3)**

Art history methods or selected topics in the theory and criticism of art. (Lec. 3) Pre: permission of chairperson. May be repeated for credit with permission of instructor.

**462 Contemporary Art Seminar: Art Since 1945 (3)**

Analysis of contemporary work and its relation to earlier movements. (Seminar) Pre: 363. May be repeated for a maximum of 6 credits with permission of instructor.

**469, 470 Art History: Senior Projects (3–6 each)**

Intensive, independent work on a project determined by consultation with the student's project advisor. (469, Independent Study; 470, Tutorial) Pre: senior standing, art history major, permission of chairperson.

**480 Advanced Topics in European and American Art (3)**

Consideration of the history of European and American art through analysis of selected periods or themes. (Seminar) Pre: permission of instructor. May be repeated for credit with a different topic. Fall 2002: Reproducing Greek Sculpture - Copies, Revivals, Fakes. Spring 2003: Issues in the Preservation of Art and Architecture.

**Astronomy (AST)**

*Chairperson:* Professor Müller

**108 Introductory Astronomy (3)**

Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstration. (Lec. 3) (N)

**334 Optics**

See Physics 334.

**483, 484 Laboratory and Research Problems in Physics**

See Physics 483, 484.

**491, 492 Special Problems**

See Physics 491, 492.

**Bachelor of General Studies (BGS)**

*Coordinator:* A. Hubbard

**100 Pro-Seminar (3)**

Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. Must be taken concurrently with URI 101. S/U credit. (Cw)

**350 Directed Study or Research (1–6)**

Directed research or study designed to meet the particular needs of individual students. (Independent Study) Pre: permission of the academic department chairperson and the BGS Program Coordinator. May be repeated for a maximum of 6 credits.

**390 Social Science Seminar (6)**

Exploration of the social sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. (S)

**391 Natural Science Seminar (6)**

Exploration of the natural sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. (N)

**392 Humanities Seminar (6)**

Exploration of the humanities for BGS students who have completed their Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. (L)

**397 Human Studies Major Seminar (3)**

Capstone course of human studies major. Review and assessment of students' major education through intensive exploration of issues central to human studies. (Seminar) Pre: completion of 30 credits of major. Required of BGS human studies majors.

**398 Applied Communication Major Seminar (3)**

Capstone course of applied communications major. Review and assessment of students' major education through intensive exploration of issues central to professional communications. (Seminar) Pre: completion of 30 credits of major courses. Required of all applied communication majors.

**399 Supervised Senior Project (3)**

A project chosen by the student with faculty guidance on a topic relevant to the student's major, resulting in a paper or other demonstration of academic achievement. (Independent Study) Pre: senior standing in B.G.S. program and approval of advisor and B.G.S. coordinator. Required of B.G.S. students.

**Biochemistry (BCH)**

*Chairperson:* Professor Sperry

**282 The Nature of Biochemistry (3)**

A few topics will be selected for historical development on the basis of their significance in the emergence of biochemistry as a scientific discipline, their importance in revealing fundamental principles of biochemistry, and their continual prominence in contemporary research. (This is not a survey course in biochemistry.) Pre: CHM 124 or 227.

**311 Introductory Biochemistry (3)**

Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins, and hormones integrated into a general discussion of the energy-yielding and biosynthetic reactions in the cell. (Lec. 3) Pre: CHM 124 or equivalent.

**312 Introductory Biochemistry Laboratory (2)**

Laboratory exercises illustrate chemical and physical properties of biomolecules, separation techniques, enzyme catalysis, symptoms of nutritional deficiency, quantification of metabolic end-products, and drug detoxification. (Lab. 4) Pre: credit or concurrent enrollment in 311.

**342 Human Genetics and Human Affairs (3)**

Basic principles of genetics including patterns of inheritance, mitosis and meiosis, sex determination and sex linkage. Genetic diseases, their cause and cures. Recombinant DNA and genetic engineering. Human diversity and evolution. (Lec. 3) (N)

**352 Genetics**

See Biological Sciences 352.

**401 (or MIC 401) Quantitative Cell Culture (3)**

Methods of mammalian cell culture used for quantitative studies of normal and abnormal cells. Basic techniques for propagation and manipulation of cells in culture. (Lec. 2, Lab. 3) Pre: MIC 211 or BCH 311. In alternate years. Next offered fall 2003.

**403 (or MIC 403) Introduction to Electron Microscopy (2)**

Survey of techniques in electron microscopy. Discussion of advantages and limitations. Thin sectioning, negative staining, shadow-casting, freezing-etching, histochemical procedures, autoradiology, darkroom procedures, scanning electron microscopy, interpretation of electron micrographs. (Lec. 2) Pre: permission of chairperson.

**405 Electron Microscopy Laboratory**

See Microbiology 405.

**412 Biochemistry Laboratory (3)**

Same as 312 plus an individual supervised laboratory project selected in consultation with the student. Projects may include enzyme action, enzyme induction, drug action, use of radioisotopes, and plant metabolism. (Lab. 6) Pre: credit or concurrent enrollment in 311.

**421 (or MIC 421) Cell Biology and Cancer (3)**

Methods of study of the cancer cell and comparison to normal cell. Emphasis on cell culture experiments. (Lec. 3) Pre: MIC 211 or BCH 311. In alternate years. Next offered fall 2002.

**435 Physical Chemistry for Life Sciences (3)**

Gases, solution, thermodynamics, equilibrium, kinetics, quantum theory, and photochemistry. (Lec. 3) Pre: one semester each of organic chemistry, physics, and calculus (two semesters of each recommended). Not open to chemistry majors.

**437 Fundamentals of Molecular Biology**

See Biological Sciences 437.

**451 Laboratory in Cell Biology**

See Biological Sciences 451.

**452 (or PLS 452) Advanced Topics in Genetics (3)**

More detailed treatment of topics introduced in the general genetics course (352) including aspects of transmission genetics, molecular genetics, cytogenetics, biotechnology, developmental genetics and the impact of genetics on society. (Lec. 3) Pre: AFS, BCH, BIO or PLS 352.

**453 Cell Biology**

See Biological Sciences 453.

**454 Genetics Laboratory**

See Biological Sciences 454.

**464 Biochemistry of Metabolic Disease (3)**

A study of the primary and secondary molecular changes in human metabolic diseases. Topics include aging, alcoholism, arteriosclerosis, diabetes, depression, and genetic diseases. (Lec. 3) Pre: 311 or 481.

**481 Principles of Biochemistry I (4)**

Principles of biochemistry including bioenergetics, proteins and enzymology, carbohydrate metabolism, and oxidative phosphorylation. (Lec. 3, Rec. 1) Pre: CHM 228, 229. Not for graduate credit in biochemistry.

**482 Principles of Biochemistry II (4)**

Principles of biochemistry including membranes, photosynthesis, lipid and nitrogen metabolism, hormones, and biosynthesis of DNA, RNA, and proteins. (Lec. 3, Rec. 1) Pre: CHM 228, 229 and BCH 481. Not for graduate credit in biochemistry.

**484 Physical Methods in Biochemistry (3)**

Experimental methods including spectroscopy, spectrofluorimetry, optical rotation, chromatography, and electrophoresis are applied to biochemical compounds and reactions. Physical principles and the calculation of important properties are stressed. (Lec. 1, Lab. 4) Pre: 435, 481, and permission of chairperson.

**491, 492 Research in Biochemistry (1–6 each)**

Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. (Independent Study) Pre: permission of instructor. Not for graduate credit in biochemistry.

**495, 496 Biochemistry Seminar (1 each)**

Discussion and presentation of research papers on selected subjects in biochemistry. (Lec. 1) Pre: 311, 482, or 582.

**502 Techniques of Molecular Biology**

See Microbiology 502.

**503 Electron Microscopy**

See Microbiology 503.

**505 Laboratory in Electron Microscopy**

See Microbiology 505.

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**521 Physical Biochemistry (3)**

The use of diffusion, sedimentation, viscosity, electrophoresis, isoelectric focusing, chromatography, and spectroscopy (including linear and circular dichroism) to determine the size, shape, structure, interactions, and molecular weight of biological macromolecules. (Lec. 3) Pre: 435 or equivalent. In alternate years. Next offered fall 2003.

**522 Plant Molecular Biology**

See Biological Sciences 522.

**523, 524 Special Topics in Biochemistry (1–3 each)**

Advanced work arranged to suit the individual needs of the student. Lecture and/or laboratory according to the nature of the problem. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. S/U credit for 524.

**542 Proteins: Purification and Characterization (3)**

Use of techniques for protein purification and activity studies. Laboratories involve enzymology, chromatography, investigation of soluble and membrane-bound receptors, gel electrophoresis and silver staining, thin-layer electrophoresis and autoradiography. (Lab. 9) Pre: 311 or 581 and permission of instructor.

**551 (or MTC 551) Topics in Biochemistry for the Clinical Scientist (3)**

Description of the major components of biochemistry as it relates to the medical sciences. Major concepts include molecular genetics, regulatory biochemistry, and medically related applied biochemistry. (Lec. 3) Offered every third year.

**552 Microbial Genetics**

See Microbiology 552.

**572 Plant Biochemistry**

See Plant Sciences 572.

**573 Developmental Genetics**

See Biological Sciences 573.

**579 Advanced Genetics Seminar**

See Biological Sciences 579.

**581 General Biochemistry I (3)**

First semester of a two-semester course on the principles of biochemistry. Topics include: bioenergetics, protein structure, enzymology, glycolysis, the tricarboxylic acid cycle, and oxidative phosphorylation. (Lec. 3) Pre: CHM 228 and 229.

**582 General Biochemistry II (3)**

Second semester of a two-semester course on the principles of biochemistry. Topics include: photosynthesis, membranes, hormones, metabolism, the biosynthesis of DNA, RNA, and proteins. (Lec. 3) Pre: 581 or permission of instructor.

**583 Metabolism (3)**

Intensive study of metabolic pathways of carbohydrates, lipids, and nitrogenous compounds; their interrelationships. Effects of hormonal and nutritional status on activity of these pathways. (Lec. 3) Pre: 581, 582, and/or permission of chairperson. In alternate years.

**584 Membrane Biochemistry (3)**

Review of model systems for biochemical, physical, and chemical studies of cell membranes. Discussion of current research directed at a molecular understanding of membrane structure and function. (Lec. 3) Pre: credit or concurrent enrollment in 582 or permission of instructor. In alternate years. Next offered 2003–04.

**585 Recent Advances in Receptor Research (1)**

Discussion of current research literature about receptors for hormones, pheromones, neurotransmitters, and other biological signals. Consequences of receptor activation will also be discussed. (Lec. 1) Pre: 311 and permission of instructor. May be repeated.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**622 Advanced Electron Microscopy (2)**

The physical functioning of electron microscopes, high-resolution microscopy of macromolecules, newly available EM histochemical procedures, and computer processing of electron images. (Lec. 2) Pre: 403, 405, or permission of chairperson.

**624 Advanced Electron Microscopy Laboratory (2)**

Cleaning and aligning the electron microscope, development of independent project using advanced techniques, and formal presentation of results of individual projects to the class. (Lab. 6) Pre: credit or concurrent enrollment in 622 or permission of chairperson.

**642 Biochemical Toxicology**

See Biomedical Sciences 642.

**651, 652 Research in Biochemistry (3 each)**

Students are required to outline a research problem, conduct necessary literature survey and experimental work, and present the observations and conclusions in a substantial written report. (Independent Study) Pre: graduate standing.

**695, 696 Graduate Seminar**

See Microbiology 695, 696.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Biological Sciences (BIO)

*Chairperson:* Professor Heppner

### 100 Topics in Biology (3)

Introduction to major concepts in biology through in-depth study of individual topics. Topics will vary by semester and instructor. Designed for nonmajors. Topics listed in registration catalog. (Lec. 3) May not be repeated. Not open to students with credit in 103 or 104.

### 101 Principles of Biology I (4)

Chemistry, structure, metabolism, and reproduction of cells. Principles of genetics. Structure, development, and physiology of animals. Survey of the animal kingdom. (Lec. 3, Lab. 2) (N)

### 102 Principles of Biology II (4)

Structure, physiology, and reproduction of plants. Diversity of plants, fungi, and algae. Principles of ecology and evolution. (Lec. 3, Lab. 2) Pre: 101. (N)

### 103 Topics in Biology with Recitation (3)

Introduction to major concepts in biology through in-depth study of individual topics. Designed for nonmajors. Recitation illustrates or extends lecture. Topics listed in registration catalog. (Lec. 2, Rec. 1) May not be repeated. Not open to students with credit in 100 or 104.

### 104 Topics in Biology with Laboratory (3)

Introduction to major concepts in biology through in-depth study of individual topics. Designed for nonmajors. Laboratory illustrates or extends lecture. Topics listed in registration catalog. (Lec. 2, Lab. 2) May not be repeated. Not open to students with credit in 100 or 103.

A Biology of Plants (N)

B General Animal Biology (N)

### 105 Biology for Daily Life with Laboratory (3)

Basic biological principles needed to understand contemporary issues in biology, for example, forensic biology, cloning, genetic engineering, reproductive technologies, "alternative" medicine, biodiversity, habitat alteration, and endangered species. Designed for nonmajors. (Lec. 2, Lab. 2)

### 106 Biology for Daily Life with Recitation (3)

Basic biological principles needed to understand contemporary issues in biology, for example, forensic biology, cloning, genetic engineering, reproductive technologies, "alternative" medicine, biodiversity, habitat alteration, and endangered species. Designed for nonmajors. (Lec. 2, Rec. 1)

### 107 Plant Biology Seminar

See Plant Sciences 107.

### 121 Human Anatomy (4)

Elementary anatomy of the organ systems, studied with the aid of charts, models, and dissection of the cat. (Lec. 2, Lab. 4) Open to B.A. biology, B.S. biological sciences, physical education, dental hygiene, nursing, pharmacy, pre-physical therapy, and dietetics majors only.

### 130 Topics in Marine Biology (1)

Current and classical issues considered in small classes. Designed for students interested in marine biology. (Seminar) Pre: Limited to marine biology majors. Required of all freshmen marine biology majors and students entering the major with fewer than 24 credits. May not be repeated.

### 141 Introduction to the Biology of Marine Animals (3)

Environmental adaptations, physiology, and behavior of marine animals. Description of methods of study of marine animals. (Lec. 3) Pre: open to freshmen only or by permission of instructor. Not for major credit for B.A. Biology, B.S. Biological Sciences, or B.S. Marine Biology. In alternate years.

### 201 General Animal Physiology (3)

Basic principles of physiology with emphasis on cellular and membrane mechanisms. Topics include bioenergetics and metabolism, enzymes, respiratory functions of blood cells, osmoregulation, bioelectricity and motility, cellular responses to humoral stimuli. (Lec. 2, Lab. 3) Pre: two semesters of biological sciences and one semester of chemistry recommended.

### 203 Introduction to Evolutionary Genetics (3)

The genetic basis of evolutionary change. Topics of the origin, maintenance, and significance of genetic variation. The Darwinian revolution. (Lec. 2, Lab. 3) Pre: two semesters of biological sciences.

### 205 Animal Diversity (3)

Survey of animal groups with emphasis on invertebrate forms, laboratory dissections, observations, and experiments. Occasional field trips. Lectures stress progressive specialization of structures and their functions. (Lec. 2, Lab. 3)

### 206 Population and Community Dynamics (3)

Principles of population and community dynamics from mathematical perspective. Topics include population growth, species interactions, optimal foraging strategy, niche theory, natural selection. Laboratory sessions incorporate use of natural selection, use of computers, problem solving, and population growth in *Tribolium* and *Daphnia*, competition and predation. (Lec. 2, Lab. 3)

### 242 Introductory Human Physiology (3)

Functions of the organ systems of the human body and their coordination in the whole human organism. Attention is given to the needs of students preparing for health-related professions. (Lec. 3) Pre: 121. Not open to students with credit in 442.

### 244 Introductory Human Physiology Laboratory (1)

Mechanisms of physiological processes are illustrated by experiments on vertebrate animals. (Lab. 3) Pre: credit or concurrent enrollment in 242.

### 262 Introductory Ecology (3)

Structure and function of ecosystems, limiting factors, population dynamics, population interactions, and community relationships. Selected habitats and general ecological effects of humans. (Lec. 3) Pre: 104A, 104B, 101, 102 or equivalent.

### 286 Humans, Insects, and Disease (3)

Role of insects, ticks, and mites as vectors and as direct agents of diseases in humans; factors affecting the spread of these diseases and their role in our cultural development. (Lec. 3) Not for major credit for B.S. in biological sciences. (N)

### 301 Physiological Experiments (3)

Methods of investigating physiological problems in the laboratory. Topics and techniques will be presented briefly, then employed in an individual laboratory project. (Lab. 6) Pre: any four of 201, 203, 204, 205, 206, 302.

### 302 Animal Development (3)

Descriptions and analyses of developmental changes in animals based on experimentally derived principles. (Lec. 2, Lab. 3) Pre: 101, 102, and two additional semesters of biological sciences; genetics recommended.

### 304 (204) Comparative Vertebrate Anatomy (4)

Anatomy of chordates emphasizing functional and evolutionary diversity. Lecture focuses on morphological variation and evolution. Laboratory focuses on comparative anatomy through dissections and models. (Lec. 3, Lab. 3) Pre: 101 and 102 or equivalent.

### 311 Plant Anatomy (3)

Structure of vascular plant tissues and organs as it relates to their function. Variations in anatomy, phylogeny of vascular tissue, anatomy of fossils, and the relation of structure to economic value. (Lec. 2, Lab. 3) Pre: 102 or permission of instructor.

### 321 Plant Diversity (3)

Representative forms of prokaryotes, algae, fungi, bryophytes, and vascular plants with emphasis on evolution, ecology, and life cycle. (Lec. 2, Lab. 3) Pre: 102 or permission of instructor.

### 323 Field Botany and Taxonomy (4)

Collection, identification, and study of vascular flora of Rhode Island, including use of manuals and herbarium specimens. Field trips throughout Rhode Island. Discussion of principles, methods, and data used in classification. (Lec. 2, Lab. 4) Pre: 104A or 102.

**327 Vertebrate Histology (3)**

A study of the normal microscopic organization of the cells and tissues that compose the organ systems of vertebrates. An introduction to histochemical and cytochemical methods is included. (Lec. 3) Pre: one year of biological sciences and one semester of organic chemistry.

**329 Vertebrate Histology Laboratory (1)**

A detailed study in the laboratory of prepared microscope slides of cells and tissues of vertebrates. (Lab. 3) Pre: credit or concurrent enrollment in 327.

**331 Parasitology (3)**

Structure, life cycles, ecology, and economic relationships of the parasitic protozoa, helminths, and arthropods. Origin and biological significance of parasitism and host-parasite relationships. Encompasses experimental laboratory work on life cycles of selected species and collection and identification of local parasitic forms including those from the marine fauna. (Lec. 2, Lab. 3) Pre: two semesters of biological sciences.

**332 (or PLS 332) Plant Pathology (4)**

Nature, cause, and control of plant diseases. Use of basic techniques for identification of major types of plant diseases and their causal agents. (Lec. 4) Pre: 102 or permission of instructor.

**334 Physiology of Exercise**

See Physical Education and Exercise Science 334.

**335 Physiology of Exercise Laboratory**

See Physical Education and Exercise Science 335.

**341 Principles of Cell Biology (3)**

An introduction to the structure and organization of eukaryotic cells. Topics include membranes and organelles, gene expression, protein synthesis and secretion, energy utilization, the cytoskeleton and signal transduction. (Lec. 3) Pre: one semester of biological sciences and one semester organic chemistry.

**345 Marine Environmental Physiology (3)**

The physiological basis of adaptation to the marine environment. Physiological methods adapted to marine plants and animals. (Lec. 2, Lab. 3) Pre: Two semesters of biological sciences.

**346 Plant Physiology (3)**

Development and function of vascular plants, including energy and nutrient assimilation, growth, reproduction, and interactions with other organisms and the physical environment. (Lec. 3) Pre: 102, one semester of chemistry, or permission of instructor.

**348 Plant Physiology Laboratory (1)**

Laboratory methods in plant physiology, including experimental design and reporting. Techniques include water potential measurement, chromatogra-

phy, spectrophotometry, enzyme assay, tissue culture, bioassay, protein extraction, and gel electrophoresis. (Lab. 3) Pre: 346, may be taken concurrently.

**350 (or GEO 350) Evolution (4)**

Introduction to evolution as the unifying thread in the biosphere. Processes and patterns discussed, including microevolution and macroevolution. Social impact of evolution discussed from a biological perspective. Pre: GEO 102 or one semester of biological sciences, or permission of instructors.

**352 (or BCH 352) Genetics (3)**

Fundamental concepts of inheritance and variation in plants, animals, bacteria, and viruses. Methods of recombination, the process of mutation, gene structure, and function. (Lec. 3) Pre: 101 and 102 or permission of instructor. Not open to students with credit in AFS 352 (or PLS 352).

**354 Invertebrate Zoology (4)**

Study of the origin and evolutionary relationship of the invertebrate animals. Emphasis on marine forms. Laboratory sessions include comparative study of selected examples and field trips to local environments. (Lec. 2, Lab. 4) Pre: 101 and 102.

**355 Marine Invertebrates of Southern New England (3)**

Collection and identification of marine invertebrates of southern New England. Emphasis on field and laboratory studies. Student collection will incorporate video photography. (Lab. 6) Pre: 101 and 102 or permission of instructor.

**360 Marine Biology (4)**

The nature of plants and animals of the sea. Diversity of species and adaptations to habitats from the sea surface to the depths of the ocean. (Lec. 3, Lab. 3) Pre: 101, 102.

**381 Introductory Entomology**

See Entomology 385.

**382 Introductory Entomology Lab**

See Entomology 386.

**396 Biology and Society (2)**

A seminar course dealing with the impact of biological discoveries on societal questions and with the social influences that affect biological discovery. Discussion of original papers, magazines, newspaper articles, and books about various discoveries. (Seminar) Pre: three courses in biology (including current enrollment) or permission of instructor.

**397, 398 Colloquium in Biological Sciences (0 each)**

Introduction to modern scholarly work in biology. Lectures by visiting and resident scholars, with questions from the audience. Expected of students enrolled in the biology honors program. (Lec.) Pre: Open to biological sciences majors only. S/U only.

**418 Marine Botany (3)**

Field and laboratory study of ecology and taxonomy of various communities of marine plants, primarily seaweeds and seagrasses. Methods of collecting, fixation, herbarium processing, and identification. Individual projects required. (Lec. 2, Lab. 3) Pre: two courses in biological sciences including 102 or equivalent.

**432 Mycology: Introduction to the Fungi (4)**

Structure, development, cytology, distribution, and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. (Lec. 2, Lab. 4) Pre: 104A or 102; 321 recommended.

**437 (or BCH 437) Fundamentals of Molecular Biology (3)**

Biochemical basis of heredity as seen through the structure and function of nucleic acids. Includes DNA replication, transcription, translation, gene regulation, and gene organization in prokaryotes and eukaryotes. Current methods emphasized. (Lec. 3) Pre: MIC 211, BIO 352, and BCH 311, or permission of instructor.

**441 Environmental Physiology of Animals (3)**

The dynamics of the interaction of animal functions with the environment. Emphasis on quantitative study of physiological adaptations to environmental fluctuations. (Lec. 3) Pre: 201 or equivalent.

**442 Mammalian Physiology (3)**

Intensive study of the physiological mechanisms that regulate the animal body and its organ systems. Emphasis on knowledge obtained from experimental physiology. Class discussion of applied physiology. (Lec. 2, Rec. 1) Pre: one semester each of anatomy and physiology courses or permission of instructor.

**444 Experimental Physiology (1)**

Introduction to non-invasive research methods in physiology. Emphasis on experimental design, recording and analyzing data, and use of laboratory notebooks in writing for publication. (Lab. 3) Pre: one semester each of anatomy and physiology courses or permission of instructor.

**445 Endocrinology I (3)**

Comparative approach to the endocrine regulation of the organism and to the molecular basis for hormone action. (Lec. 3) Pre: BCH 311 or equivalent and BIO 201 or 242 or equivalent. In alternate years.

**446 Introduction to Cellular and Behavioral Neurobiology (3)**

Basic principles of excitable cell function. Emphasis will be on cellular and membrane mechanisms as they relate to behavior (Lec. 3) Pre: an animal physiology course; one semester of calculus, physics, or biochemistry is strongly recommended or

permission of instructor. Next offered spring 2004. Not for graduate credit.

#### 451 (or BCH 451 or MIC 451) Laboratory in Cell Biology (1)

Analysis of subcellular processes, structures, and molecules using techniques including gel electrophoresis, spectrophotometry ultracentrifugation, and protein purification. Topics range from analysis of gene expression to subcellular localization of enzymatic activity. (Lab. 2) Pre: concurrent enrollment in 453 (or MIC 453) or permission of instructor.

**453 (or BCH 453 or MIC 453) Cell Biology (3)**  
Structure, replication, and function of eukaryotic cells at subcellular level. Topics considered include cell membranes, cytoplasmic organelles and nuclei, cell division, cellular differentiation, and methods. Emphasis on recent publications. (Lec. 3) Pre: two semesters of biological sciences, BCH 311, junior standing, or permission of instructor.

**454 (or BCH 454) Genetics Laboratory (3)**  
Principles of classical and molecular genetics using microorganisms as well as higher plants and animals. Experimental techniques include human chromosome preparations, screening for growth requirements in microorganisms, mutagenesis, gel electrophoresis, and nucleic acid hybridization. (Lab. 6) Pre: 352. In alternate years.

**455 Marine Ecology (3)**  
Investigation of the structure and dynamics of various marine ecosystems. Includes mineral cycling, energy flow, community and population organization, and behavioral ecology in selected marine environments. (Lec. 3) Pre: 262 or permission of instructor.

**457 Marine Ecology Laboratory (1)**  
Field and laboratory work on community relationships of dominant organisms in Rhode Island marine environments. (Lab. 3) Pre: concurrent enrollment in 455. Limited to 15 students.

**458 Freshwater Ecology (4)**  
Interactions among physical, chemical and biological processes that affect distribution and abundance of freshwater organisms (Lec. 3, Lab. 3) Pre: 206 or 262 and one semester of chemistry.

**460 Advanced Population Biology (3)**  
An extension of the seminal views of Fisher, Wright, Haldane, Volterra, and Lotka on the biology of populations, especially in the areas of genetics, ecology, and demography. (Lec. 3) Pre: MTH 131 and 132 or 141 and 142.

**465 Biology of Algae (3)**  
Taxonomy, morphology, and evolution of algae. Use of ultrastructure in modern taxonomy; various systems of classification. Field trips to different

communities. Labs on the taxa discussed and techniques for axenic culture. (Lec. 1, Lab. 3) Pre: 102, 321 recommended.

**466 Vertebrate Biology (3)**  
Life histories, adaptations, ecology, classifications, and distribution of vertebrate animals. Laboratory and extensive field work on local vertebrates. (Lec. 2, Lab 3) Pre: 206 or 262 recommended.

**467 Animal Behavior (3)**  
Ethology and sociobiology of animals. Topics in the control and development of behavior patterns, orientation in time and space, social behavior, and behavioral ecology. (Lec. 3) Pre: two semesters of zoology; 206 or 262 recommended.

**491, 492 Special Problems (1–3 each)**  
Selected areas pertinent to needs of individuals or small groups. Class, seminar, or tutorial situations. (Independent Study) Open only to undergraduates on arrangement with. S/U only.

**501 Systematic Zoology (3)**  
Study of animal diversity, including theories of biological classification with special focus on phylogenetic systematics, species concepts, and interpretation of taxonomic publications. (Lec. 3) Pre: 262 and 352. In alternate years.

**505 Biological Photography (3)**  
Application of scientific photography to biological subjects, living and prepared. Photomacrography. Principles of photography as applied to the specialized needs of biological research and publication. (Lec. 1, Lab. 5) Pre: permission of instructor.

**508 (or BCH/MIC/AFS/AVS/NRS/PLS 508) Seminar in Biological Literature (1)**  
Survey of biological literature including traditional methods of bibliographic control, contemporary information retrieval services, and the development of a personalized information system. (Lec. 1) Pre: graduate standing or permission of the instructor.

**511 Special Readings in Developmental Plant Anatomy (3)**  
Intensive tutorial work, research, and reading on ontogeny of plant structures and morphogenetic mechanisms. (Independent Study) Pre: graduate standing and permission of instructor. Concurrent audit of 311 required. Offered on demand.

**515 Light Microscopy Research Methods (4)**  
Introduction to optical techniques and biological specimen preparation for light microscopy with emphasis on application of these methods in biological research. Topics include: optics, embedding and sectioning, fluorescence and immunocytochemistry, and computer image analysis. (Lec. 1, Lab. 6) Pre: graduate standing or permission of instructor.

**521 Recent Advances in Cell Biology**  
See Microbiology 521.

**522 (or BCH 522) Plant Molecular Biology (4)**  
Analysis of gene expression in plants including topics such as chloroplast DNA, mitochondrial DNA, transgenic plants, and symbiotic genes. Laboratory includes cloning, restriction mapping, and hybridization. Emphasis on research literature. (Lec. 2, Lab. 4) Pre: 352, BCH 311, or permission of instructor. In alternate years.

**524 Methods in Plant Ecology (3)**  
Methods in analysis of vegetation and microenvironments. Emphasis on quantitative techniques in analysis of vegetation, soil, and microclimate; techniques in physiological ecology. (Lec. 2, Lab. 3) Pre: 102 and 262 or equivalent; STA 412 recommended. In alternate years.

**531 Advanced Parasitology Seminar (2)**  
Advanced topics in the host-parasite relationships of protozoan and metazoan parasites. Reading knowledge of one foreign language assumed. Topics vary from year to year. (Lec. 2) Pre: 331 or equivalent.

**536 Seminar in Plant Stress Physiology (1–2)**  
Readings, discussion, and analysis of current literature with emphasis on biochemical and genetic aspects of responses. Students electing two credits will write review papers. (Seminar) Pre: one course in plant physiology and one course in biochemistry. In alternate years.

**541 Comparative Physiology of Marine Animals (3)**  
Comparison of physiological mechanisms by which animals maintain life with emphasis on marine invertebrates. Responses to external environment mediated by receptors, nervous systems, effectors. Living control systems for muscular activity and circulation. (Lec. 3) Pre: one physiology course. In alternate years.

**545 Endocrinology II (3)**  
Molecular basis of hormone action and evolution of regulatory systems. (Lec. 3) Pre: graduate standing and one course in physiology and one course in biochemistry at the college level. In alternate years.

**546 Introduction to Neurobiology (2)**  
Fundamental processes in neurobiology with emphasis on cellular and membrane mechanisms of nerve functioning. (Lec. 2) Pre: 201 and MTH 141. In alternate years.

**547 Laboratory in Electrophysiological Techniques (2)**  
Introduction to methods of extracellular and intracellular electrophysiology of excitable tissues. (Lab. 4) Pre: credit or concurrent enrollment in 546. In alternate years.

**549, 550 Advanced Topics in Neurobiology (3 each)**

Published papers in selected aspects of neurobiology will be discussed. Representative topics include role of  $\text{Ca}^{++}$ , c-AMP in the nervous system, gating currents learning at the cellular level, cellular rhythmicity. (Seminar. In alternate years.

**551 Seminar in Aquatic Botany (1)**

Readings and discussion on current research involving algae and other aquatic plants. (Seminar) Pre: permission of instructor. May be repeated.

**560 Seminar in Plant Ecology (2)**

Recent topics and investigations pertinent to plant ecology. Library research, oral presentation of reports, and group discussions. (Seminar) Pre: 262 or equivalent or permission of instructor. May be repeated.

**561 Behavioral Ecology (3)**

The interaction of animal behavior, ecology, and evolution. Topics include predator-prey relationships, resource partitioning, competition, territoriality, and reproductive behavior. Term project required. (Lec. 3) Pre: a course in animal behavior and a course in ecology. In alternate years.

**562 Seminar in Behavioral Ecology (1)**

Special topics in the relationships between animal behavior and ecology, such as social organization of animals, evolution of behavior, competition, and habitat selection. Discussion and presentation of individual reports. (Seminar) S/U only.

**563 Ichthyology (3)**

Fishes of the world. Their structure, evolution, classification, ecology, and physiology. Emphasis on local marine and freshwater fauna. Several field trips. (Lec. 2, Lab. 3) Pre: 202 or 204 and 466.

**564 Elasmobranch Biology (3)**

Sharks, skates, rays and chimeras of the world. Their structure, evolution, classification, ecology and physiology. (Lec. 3) Pre 204 or 466. Graduate standing or permission of instructor.

**566 Herpetology (3)**

Biology of recent orders of amphibians and reptiles; emphasis on adaptations and evolution, world faunal relationships past and present, current systematic problems. Selected herpetological material in laboratory, field trips. (Lec. 2, Lab. 3) Pre: 202 or 204 or permission of instructor.

**567 Natural Selection (3)**

Ideas and controversies concerning the action of natural selection. Maintenance of genetic variability, neutral mutation, levels of selection, recombination and sexual reproduction, and rates of evolution. (Lec. 2, Lab. 3) Pre: 262 and 352 or 206 or permission of instructor.

**568 Ornithology (2)**

Biology of birds with emphasis on the role of birds in biological research. Areas covered include systematics, evolution, physiology, ecology, and behavior. Discussion of current topics in ornithology. (Lec. 2) Pre: 466 or permission of instructor.

**570 Field Biology of Fishes (3)**

Selected field problems in fish biology, including distribution and diversity, habitat segregation, reproduction, and natural movements. Emphasis on freshwater and diadromous populations. (Lec. 3) Pre: 563 or permission of instructor. Limited to 10 students, with preference given to graduate students and senior biological sciences majors.

**572 (or ENT 586) Medical and Veterinary Entomology (3)**

Life history, classification, habits, and control of insects and other arthropods affecting human and animal health. Topics will include public health significance, vector-parasite interactions, and survey and research methodologies. (Lec. 1, Lab. 4) Pre: 331 or 381 or equivalent. In alternate years.

**573 (or BCH 573) Developmental Genetics (3)**

An examination of animal and plant model systems incorporating concepts of cell biology, physiology, molecular biology, and genetics to understand fundamental mechanisms regulating patterns of organismal development. (Lec. 3) Pre: introductory courses in genetics development, biochemistry, or molecular biology preferred.

**579 (or BCH 579) Advanced Genetics Seminar (1)**

Current topics in genetics, including cytological, ecological, molecular, physiological, population, quantitative, and radiation genetics. (Seminar) Pre: 352 and permission of instructor.

**581, 582 Biological Sciences Seminar (1 each)**

Preparation and presentation of papers on subjects in selected areas relating to biology. Required of graduate students majoring in biological sciences. (Seminar) S/U credit.

**587 Seminar in Neurobiology (1)**

Current literature in the neurosciences will be surveyed. Topics include molecular and behavioral electrophysiology, ultrastructure of excitable cells, receptor and pharmacological neurobiology of invertebrates and vertebrates. (Seminar) Pre: graduate standing or one advanced neuroscience course.

**591, 592 Biological Problems (1-3 each)**

Special work arranged to meet the needs of individual students who are prepared for and desire advanced work in biological sciences. (Independent Study) Offered only by arrangement with staff.

**593 Special Topics in Botany (1-3)**

Covers the following specialized areas of botany: a) recent advances in mycology, b) physiological ecology of marine macroalgae, c) nutrient ecology of plants, and d) ecology of fungi. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 9 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**641, 642 Seminar in Physiology (1-3 each)**

Reports and discussions on topics of current research in physiology. Subject matter adapted to meet interests of and students. (Seminar) Pre: permission of instructor.

**654 Seminar in Ichthyology (2)**

Reading, library research, reports, and class discussion on problems of current research interest in the biology of fishes. (Seminar) Pre: 563 or permission of instructor. In alternate years.

**661 Phytoplankton Taxonomy**

See Oceanography 661.

**663 Phytoplankton Physiology**

See Oceanography 663.

**664 Phytoplankton Ecology**

See Oceanography 664.

**666 Biology of Metamorphosis (3)**

The evolutionary, ecological, and physiological regulation of metamorphosis and related life-history events in diverse taxa. (Seminar) Pre: graduate standing and 541 or 545 or 567 or 573.

**668 Biology of Reproduction in Animals (3)**

Evolution of sexual reproduction, neuroendocrine signals, and behavioral controlling mechanisms in diverse phyla. (Lec. 3) Pre: 545, 561, or 567.

**675 Advanced Ecology Seminars (2 each)**

Specialized and advanced areas of ecological research and theory, including biogeography, Pleistocene ecology, population dynamics, energy flow in ecosystems, and radiation ecology. (Seminar) Pre: permission of instructor.

**679 Animal Communication**

See Oceanography 679.

**691 Biological Problems (1-6)**

Special work to meet the needs of individual students who are prepared to undertake special problems. (Independent Study) Pre: permission of chairperson. Open only to doctoral students.

**695 Graduate Seminar (1)**

Students to give seminar reports on their thesis research. Attendance and registration required of all



graduate students in residence, but only 2 credits may be applied to the program of study. (Seminar) Pre: graduate standing. S/U credit.

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### 930 Workshop in Biology Topics for Teachers (0-3)

Especially designed for secondary school science teachers. Basic topics in biology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

## Biomedical Sciences (BMS)

*Chairperson:* Professor Shaikh

### 202 Maintaining Health in the Age of Chemicals (2)

Introduction for the general student to the potential hazards posed by drugs, food additives, and pollutants to the maintenance of health. (Lec. 2) Not for program credit for nursing or pharmacy majors in the third year or beyond.

### 311 (or PHP 311) Foundations of Human Disease I: Immunoinflammatory Disease (2)

The pathogenesis, etiology, epidemiology, symptomatology, and diagnosis of immunoinflammatory and musculo-skeletal diseases. The pharmacology and medicinal chemistry of anti-inflammatory medications, immunosuppressives, and anti-rheumatic drugs. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered fall 2002.

### 312 (or PHP 312) Foundations of Human Disease II: Central Nervous System Disease (2)

The etiology, pathogenesis, epidemiology, symptomatology, and diagnosis of diseases of the central nervous system. (Lec. 2) Next offered spring 2003.

### 313 Introduction to Medicinal Chemistry and Drug Metabolism (2)

Basic chemical knowledge for understanding drug-receptor interaction, biotransformation of drugs (Phase I [oxidation, reduction, hydrolysis] and Phase II [conjugation, addition] metabolism), and prodrug concept. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered fall 2002.

### 321 Principles of Pharmacology and Autonomic Pharmacology (2)

Fundamental principles of drug action with emphasis on drug/receptor interactions. Mechanisms of action and medicinal chemistry of drugs that affect the autonomic nervous system. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered fall 2002.

### 322 Pharmacology and Medicinal Chemistry of Drugs Acting on the Central Nervous System (2)

Neurologic agents in the brain; antidepressants, antipsychotics, sedative hypnotics, analgesics, anti-seizure medications, anti-dementia therapy, and anti-anxiety medications. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered spring 2003.

### 325 Principles of Drug Analysis (2)

Competency in understanding the molecular basis of drug analysis: neutralization, oxidation/reduction, enzymatic reactions, clinically relevant spectroscopic and chromatographic techniques. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered spring 2003.

### 326 Pharmacology and Medicinal Chemistry Laboratory I (1)

Effects of drugs on physiological functions. Identification and quantification of drugs and their actions. (Lab. 3) Pre: third-year standing or permission of instructor. Next offered spring 2003.

### 333 Nursing Pharmacology (3)

Comprehensive course in nursing pharmacology that forms the basis for therapeutics. (Lec. 3) Pre: junior status and permission of instructor

### 409 (or PHP 409) Foundations of Human Disease III: Infectious and Pulmonary Processes (2)

The etiology, pathogenesis, epidemiology, symptomatology, and diagnosis of infections and pulmonary diseases. (Lec. 2) Pre: fourth-year standing or permission of instructor. Next offered fall 2002.

### 410 (or PHP 410) Foundations of Human Disease IV: Endocrinology, Oncology, Medical Genetics, GI (3)

The etiology, pathogenesis, symptomatology, and diagnosis of diseases of endocrine, oncologic, and genetic origin. (Lec. 3) Pre: fourth-year standing or permission of instructor. Next offered spring 2003.

### 416 Pharmacology and Medicinal Chemistry Laboratory II (1)

Pharmacologic principles relating to the modification of drug activity and toxicity. Clinical assays relevant to assessing drug effects. (Lab. 3) Pre: fourth-year standing or permission of instructor. Next offered fall 2002.

### 420 (or PHP 420) Biotechnology Products in Pharmacy (2)

Clinical, pharmaceutical, and economic impact of biotechnology products in pharmacy, including monoclonal antibodies, interleukins, human growth factors, antigens oligonucleotides, DNase, and interferons. (Lec. 2)

### 421 Pharmacology and Medicinal Chemistry of Anti-infective and Respiratory Agents (2)

Chemistry, mechanism of action, sensitivity, resistance and toxicity of anti-infections drugs, and an

overview of antibacterial, antifungal, antiviral, antiprotozoal, respiratory drugs, and vaccines in current use. (Lec. 2) Pre: fourth-year standing or permission of instructor. Next offered fall 2002.

### 422 Endocrine, Gastrointestinal and Biotechnologic Drugs (2)

Mechanisms of action of drugs used to treat endocrine and gastrointestinal disorders. Biological and biotechnologic sources, isolation, design, and medicinal chemistry of biopolymer drugs. (Lec. 2) Pre: fourth-year standing or permission of instructor. Next offered spring 2003.

### 436 (or PSY 436) Psychotropic Drugs and Therapy (3)

Interaction of drug and nondrug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. (Lec. 3) Pre: any one of the following—BIO 101, 104B, 113, 121, PSY 381, or permission of instructor. Not for graduate credit.

### 445 Natural Products and Biotechnological Drugs (3)

Natural drug products of biological or biotechnological origin. Sources, process of isolation or production, and general fundamental properties. (Lec. 3) Pre: CHM 228; MIC 201 or equivalent.

### 497, 498 Special Problems (1-5 each)

Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

### 510 (or PHP 510) Foundations of Human Disease V: Renal and Cardiovascular Diseases (2)

The etiology, pathogenesis, epidemiology, and symptomatology, and diagnosis of renal and cardiovascular diseases. (Lec. 2) Pre: fifth-year standing or permission of instructor. Next offered spring 2003.

### 518 (or PHP 518) Self-Care I (3)

An overview of alternative therapies with an emphasis on self-care and natural medicine alternatives. Basic information as well as case studies. (Lec. 3) Pre: fifth-year standing or permission of instructor. Next offered fall 2002.

### 519 Self-Care II

See Pharmacy Practice 519.

### 520 Biomedical Sciences Journal Club (2)

Critical reviews of current research reports in the field of biomedical sciences. The students will be evaluated on the basis of their effectiveness in organization, interpretation, and oral presentation, according to criteria already established in the department. (Lec. 3) Pre: good standing in the basic research track of the Pharm.D. program. Not for graduate credit.

**521 Cancer Chemotherapy and Toxicology (2)**

Pharmacology and medicinal chemistry of oncology drugs. Principles of toxicology. (Lec. 2) Pre: fifth-year standing or permission of instructor. Next offered fall 2002.

**522 Pharmacology and Medicinal Chemistry of Cardiovascular and Renal Drugs (2)**

Mechanism of action, adverse effects, and therapeutic applications of drugs affecting cardiovascular and renal function. (Lec. 2) Pre: fifth-year standing or permission of instructor. Next offered spring 2003.

**523, 524 Seminar (1 each)**

Seminar presentation of scientific literature on a selected topic in the biomedical sciences or on the status of students' research work. (Seminar) Required of all graduate students in the department, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 1 credit per degree. S/U only.

**525 Experimental Techniques in Biomedical Sciences (4)**

Provides experience with a variety of techniques used in biomedical science research, including HPLC, NMR, polarimetry, biotransformations, solid-phase synthesis, cell fractionation, and isolation and purification of proteins. (Lab. 4)

**530 Drug Metabolism (3)**

Mechanisms of Phase 1 (oxidation, reduction, hydrolysis) and Phase 2 (conjugations and synthesis) of drug metabolism. (Lec. 3) Pre: BCH 581 or permission of instructor. In alternate years. Next offered spring 2003.

**533 Medicinal Plants (3)**

Problems in drug plant chemotaxonomy with field work in the drug plant gardens. Emphasis is placed on certain alkaloid, glycoside and oil-yielding plants, weedicides and insecticides as related to measures for control. (Lec. 2, Lab. 3) Pre: 446 or equivalent.

**535 Pharmaceutical Biotechnology (3)**

Introduction to pharmaceutical biotechnology, including drug design, DNA sequencing, cloning, recombinant proteins, monoclonal antibodies, and drug-screening techniques. (Lec. 3) Pre: BCH 581 or permission of instructor. Next offered spring 2004.

**544 Forensic Toxicology (3)**

Theoretical and practical aspects of poisoning including the isolation and identification of toxic materials from pharmaceuticals, body fluids, and tissues. Isolation and identification of physiological fluids from stains, hairs, and tissue with application to forensic medicine. (Lec. 2, Lab. 3) Pre: permission of instructor.

**545 Applied Toxicology (2)**

A two-credit lecture course dealing with cases of common toxic syndromes caused by drug overdose or exposure to environmental agents. Antidotes/patient decontamination measures will be surveyed. Patient case studies will be discussed. (Lec. 2) Pre: 322, 455, 521 or permission of instructor.

**546 Advanced Toxicology (3)**

Toxic effects of selected drugs and other xenobiotics on physiological and biochemical processes. (Lec. 3) Pre: permission of instructor. Offered every third year. Next offered fall 2003.

**551 Chemistry of Natural Products (3)**

Introduction to chemistry of certain groups of natural products especially in relation to their chemotaxonomic position in plant classification. Topics limited to secondary metabolites; e.g., terpenoids, phenolic compounds, aromatic compounds, phytosterols, alkaloids. (Lec. 3) Pre: CHM 228 and 230. In alternate years. Next offered fall 2002.

**572 Neural Bases of Drug Action (3)**

Review of neuroanatomy, neurochemistry, and neurophysiology as they relate to drug action. (Lec. 3) Pre: 446 or equivalent or permission of instructor. Offered every third year. Next offered spring 2003.

**597, 598 Special Problems (1–3 each)**

Special graduate student project assignments in research under the supervision of faculty. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**633 Biosynthesis (3)**

Biogenesis of medicinally active principles of biological origin. Emphasis given to organic acids, polysaccharides, glycosides, steroids, and certain nitrogenous compounds. (Lec. 3) In alternate years. Next offered spring 2003.

**635, 636 Pharmacognosy Techniques (3–4 each)**

Physical and chemical factors influencing growth and development of active principles of drug plants. Certain biological analyses of results are performed. (Lec. 1, Lab. 6–9)

**641 Biochemical Pharmacology (3)**

Theory and application of pharmacological studies at the cellular and subcellular levels and their significance to drug action in the intact organism. (Lec. 2, Lab. 3) Pre: permission of instructor. Offered every third year. Next offered fall 2002.

**642 (or BCH 642) Biochemical Toxicology (3)**

Biochemical and molecular aspects of chemically induced cell injury and chemical carcinogenesis.

(Lec. 3) Pre: permission of instructor. Offered every third year. Next offered fall 2003.

**644 Cardiovascular Pharmacology (3)**

Cellular mechanisms of drug action as a basis for understanding therapeutic effects. Emphasis on current developments in antihypertensive, antiarrhythmic, antianginal, and cardiotonic drug research. (Lec. 3) Pre: permission of instructor. Offered every third year. Next offered spring 2004.

**691 Selected Topics in Medicinal Science (3)**

Covers the following special research topics of interest: (a) heterocyclic chemistry, (b) nucleoside antibiotics, (c) prodrugs and isosteres, (d) nucleosides and nucleotides—synthesis and biological function, and (e) nucleic acid targeted drug design. (Lec. 3) Pre: permission of instructor. May be repeated for a maximum of 9 credits.

**697, 698 Research in Biomedical Sciences (1–3 each)**

Literature survey, laboratory work, and a detailed research report on one or more assigned topics. (Independent Study)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Business (BUS)**

Dean: Professor Mazze

**354 (or COM 354) International Business Communications Exchange (3)**

Examination of effective international business communication. Use of worldwide e-mail network to exchange views on business topics with counterparts abroad. (Lec. 3, Lab. 1) Pre: junior or senior standing or permission of instructor.

**493 Internship in Business Administration (3)**

Approved, supervised work experience with participation in management and problem solving related to the student's major field. Internships with approximately 120 hours of field experience and 20 hours of class work are provided by the college's internship program. (Practicum) Pre: senior standing, admission into internship program, and permission of instructor. Not for graduate credit. S/U only.

**601 Practicum in Business (1)**

Course involves training and experience in teaching undergraduate business courses under the supervision of a full-time faculty member. Participation in the instructional development program is an essential component of the class. (Practicum) Pre: enrollment in Ph.D. program in business administration and permission of Ph.D. program director.

### 602 Doctoral Colloquium in Business Administration (1)

Course involves presenting the results of at least one piece of original research to faculty and other Ph.D. candidates. When not presenting, students are expected to play an active role in critiquing the presented research. (Lec. 1) Pre: permission of Ph.D. program director.

### 603 Special Problems in Business Research (1-6)

Advanced research and writing of theoretical and empirical papers in business administration in the student's area of specialization under the supervision of the faculty advisor. Pre: permission of instructor. S/U only.

### 685 Knowledge Systems in Managerial Disciplines (3)

Examination of knowledge production and dissemination systems in management disciplines. Discussion of various paradigms and philosophy of science perspectives. Metascientific and research program issues are examined. (Seminar) Pre: Ph.D. candidate.

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

## Business Analysis and Computing (BAC)

Dean: Professor Mazze

### 110 Business Computing Applications (3)

Applications and concepts relevant to computers and management information systems, including communication, spreadsheet, word processing, and Internet software. (Lec. 3) Pre: open only to students with BU code or permission of instructor.

### 120 Introduction to Business Analysis and Applications (3)

Selected mathematical tools and techniques for analysis of business and economic problems and as aids in decision making. Topics from finite and modern mathematics and applied calculus. (Lec. 3) Pre: open only to students with BU code or permission of instructor. Algebra proficiency test required. (M)

### 201, 202 Managerial Statistics I, II (3 each)

201: General statistical methods used in the collection, presentation, analysis, and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation, and

tests of hypothesis. Pre: 120 or equivalent. 202: Additional data analysis techniques, including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index numbers. (Lec. 3) Pre: 201.

### 500 Computing for Management (2-3)

Computer concepts and programming using spreadsheet, database, presentation, communication, and other software packages. Emphasis on PC computing as an administrative and analytic tool for applications in management. (Lec. 2-3) Graduate credit for non-M.B.A. students only if MSI 600 is completed.

### 520 Mathematical Methods for Management (3)

Fundamental mathematical methods applied to the understanding and solution of managerial problems. Topics include the solution of systems of linear equations, differential calculus, and related areas. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only.

## Business Law (BSL)

Dean: Professor Mazze

### 333 Legal and Ethical Environment of Business I (3)

An introduction to the origins, framework, and concepts of the legal and ethical environment of business with emphasis on contractual relations. (Lec. 3) Pre: junior standing. Open to nonbusiness students with permission of chairperson.

### 334 Legal and Ethical Environment of Business II (3)

Operations of the U.S. system of jurisprudence and ethics as it affects the law of contracts, sales, debtor-creditor rights, and business organizations. (Lec. 3) Pre: 333. Open to nonbusiness students with permission of chairperson.

### 460 Law and the Entrepreneur (3)

Study of legal issues of concern to the entrepreneur: business organizations; limited partnership syndications, bankruptcy, SEC regulations, and patent and trademark protection. (Lec. 3) Pre: 333.

### 501 Law and Accounting (3)

Introduction to C.P.A. law exam, question and answer techniques, coverage of most accounting-related legal subjects currently included on the C.P.A. exam. (Lec. 3) Pre: 600 or permission of chairperson.

### 691 Directed Study in Business Law (1-3)

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

## Chemical Engineering (CHE)

Chairperson: Professor Brown

### 212 Chemical Process Calculations (3)

Orientation to chemical engineering, material-balance computations on chemical processes, use of gas laws, vapor pressure, humidity, solubility, and crystallization. (Lec. 3) Pre: CHM 112 or 192.

### 272 Introduction to Chemical Engineering Calculations (3)

Introduction to the use of computers and numerical methods, including numerical solution of differential equations as applied to chemical engineering. (Lec. 2, Lab. 3) Pre: 212 and MTH 243.

### 313 Chemical Engineering Thermodynamics I (3)

Applications of the first, second, and third laws of thermodynamics involving thermophysics, thermochemistry, energy balances, combustion, and properties of fluids. (Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243.

### 314 Chemical Engineering Thermodynamics II (3)

Continuation of 313 with applications to compression, refrigeration, phase and chemical equilibria. (Lec. 2, Lab. 3) Pre: 313.

### 322 Chemical Engineering Microlaboratory (2)

Use of microprocessors, A/D and D/A converters, sensors, and control hardware to analyze and control laboratory-scale processes. (Lab. 6) Pre: credit or concurrent enrollment in 348.

### 328 Industrial Plants (1)

Field trips to nearby plants demonstrating various phases of chemical engineering. Written reports are required. (Lab. 3) Pre: 348.

### 332 Physical Metallurgy (3)

Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics, and structure of metals, theory of alloys, thermal processing, and studies in corrosion. (Lec. 2, Lab. 3) Not open to students with credit in 333 or 437. Pre: CHM 101, 103, or 191.

### 333 Engineering Materials (3)

First course in engineering materials devoted largely, but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at nonequilibrium. (Lec. 2, Lab. 3) Pre: junior standing or permission of instructor. Not open to students with credit in 332 or 437.

### 340 Materials Processing and Metrology I

See Industrial and Manufacturing Engineering 340.

**345, 346 Chemical Engineering Laboratory (2 each)**

Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. (Lab. 6) Pre: 348.

**347 Transfer Operations I (3)**

Dimensional analysis; fluid statics; mass, energy, and momentum balances for fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. (Lec. 3) Pre: credit or concurrent enrollment in 313 or MCE 341.

**348 Transfer Operations II (3)**

Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. (Lec. 2, Lab. 3) Pre: 347.

**349 Transfer Operations III (2)**

Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. (Lec. 2) Pre: 348.

**351, 352 Plant Design and Economics (3 each)**

Elements of plant design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. (Lec. 1, Lab. 6) Pre: 314 and 348.

**391, 392 Honors Work (1–3 each)**

Independent study under close faculty supervision. Discussion of advanced topics in chemical engineering in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson.

**403, 404 Introduction to Ocean Engineering Processes I, II (3 each)**

Theory and basic principles directly applicable to ocean-related processes. Desalinization, mining, combating oil spills, seawater as a coolant, seawater as a waste dilutant, food processing, sulfur and petroleum production, recovery minerals. (Lec. 2, Lab. 4) Pre: permission of instructor.

**425 Process Dynamics and Control (3)**

Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. (Lec. 3) Pre: MTH 243 and ELE 220 and credit or concurrent enrollment in 347 or MCE 354.

**437 Materials Engineering (3)**

Introduction to engineering aspects of the fundamentals of the solid state. Structural, chemical, and physical properties of engineering materials with emphasis on ceramics, polymers, and composite materials. (Lec. 3) Pre: CHM 101, 103, or 191, or permission of chairperson.

**438 Failure Analysis and Prevention (3)**

Failure analysis of engineering components. Examples of overload, fatigue, creep, corrosion, and electrical failures in metals, glasses, ceramics, composites, polymers, concrete, and semiconductors. Case studies, microscopic techniques, and prevention are emphasized. (Lec. 3) Pre: 332, 333, or 437.

**447 Food Engineering (4)**

Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction, and drying. (Lec. 3, Lab. 3) Pre: CHM 124, PHY 112, MTH 132 or 142, and permission of instructor. Not for major credit in chemical engineering.

**464 Industrial Reaction Kinetics (3)**

Modeling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. (Lec. 3) Pre: 314 and CHM 432.

**491, 492 Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit in chemical engineering.

**501, 502 Graduate Seminar (1 each)**

Seminar discussions including the presentation of papers based on research or detailed literature surveys. (Seminar) Required of all graduate students, with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. S/U credit.

**503 Dynamics of Chemical Engineering Applications (3)**

Emphasizes analytical and/or numerical techniques commonly used in analysis arising from classical chemical engineering applications; necessary for understanding more complex problems.

**513 Advanced Chemical Engineering Thermodynamics (3)**

Applications of the first, second, and third laws of thermodynamics and their relation to chemical engineering processes. Emphasis on properties of fluids, chemical and physical equilibria, and refrigeration. (Lec. 3) Pre: 313, 314 or equivalent, graduate standing, or permission of chairperson. In alternate years.

**530 Polymer Chemistry (3)**

Polymer structure, molecular forces, glass and crystalline transitions, solution properties, polymerization kinetics, molecular weight distribution, frac-

tionation, viscoelastic properties, and transport processes. (Lec. 3) Pre: CHM 228 and CHE 332 or permission of instructor. In alternate years.

**531 Polymer Engineering (3)**

Polymer processing and mechanical properties of plastics, fibers, and elastomers. (Lec. 3) Pre: 348 or MCE 448 or permission of instructor. In alternate years.

**532 Ceramic Engineering (3)**

Properties of ceramic materials as related to starting materials and forming, densification, and finishing processes. Emphasis on resulting phases and microstructure. Application of physical and chemical principles to tailor properties to engineering needs. (Lec. 3) Pre: 437 or equivalent. In alternate years.

**533 Engineering Metallurgy (3)**

Structures and properties of metals and alloys required to meet typical engineering problems; proper selection of tool materials; properties of stainless steels; materials of special importance in nuclear fields, etc. (Lec. 3) Pre: 333 or permission of instructor.

**534 (or OCE 534) Corrosion and Corrosion Control (3)**

Chemical nature of metals, electrochemical nature of corrosion. Types of corrosion, influence of environment, methods of corrosion control. Behavior of engineering materials in corrosion with emphasis on industrial and ocean environments. (Lec. 3) Pre: permission of instructor.

**535 (or OCE 535) Advanced Course in Corrosion (3)**

High-temperature corrosion, oxidation by gaseous environments, industrial problems with high-temperature corrosion. Materials selection and techniques to combat high-temperature corrosion. (Lec. 2, Lab. 3) Pre: 534 (or OCE 534) or permission of instructor.

**537 (or OCE 537) Advanced Materials Engineering (3)**

Engineering properties, molecular design, and applications of materials. Synthesis, fabrication, and processing of materials. Effects of environment on materials, materials products, devices, and systems. (Lec. 3) Pre: 437 and PHY 341.

**539 Electron and Light Microscopy of Solids (3)**

Theory and physical principles governing the design and use of light and electron optical systems in identification, analysis, and structural characterization of metals, ceramics, polymers, glasses, and composites. Emphasis on polarized light and scanning electron microscopy. (Lec. 3)

**541 Transport Phenomena I (3)**

Analysis of transport processes in fluids with emphasis on diffusion of matter. (Lec. 3) Pre: 347, 348 or equivalent, graduate standing, or permission of chairperson. In alternate years.

**542 Advances in Interfacial Phenomena (3)**

Topics will include capillarity, surface tension; surface thermodynamics, electrical aspects of surface chemistry; contact angles and wettability; emulsions and foams; adsorption from solutions; hydrodynamic stability of interfaces. (Lec. 3) Pre: CHM 431, 432 or equivalent, or permission of instructor. In alternate years.

**548 (or NFS 548) Separations for Biotechnology (3)**

A study of methods of concentration used in the biotechnology industries for production and isolation of products. (Lec. 3) Pre: 348 or 447. In alternate years.

**560 Chemical and Physical Processes of Integrated Circuit Fabrication (3)**

Chemical and physical processes used in the fabrication of integrated circuits and devices. Emphasis on crystal growth, oxidation, CVD, plasma processes, photochemical processes, solid-state diffusion, lithography, and their relation to device performance. (Lec. 3) Pre: CHM 431, CHE 349, or equivalent. In alternate years.

**574 Biochemical Engineering I (3)**

Introduction to biotechnology. Includes properties of biological materials, dynamics, control, and operation of biological systems and processing of biological materials. (Lec. 3) Pre: permission of instructor. In alternate years.

**576 Process Engineering for Pollution Prevention (3)**

Management of processes and development of techniques for waste minimization in the chemical process, machine tool coating, plating, plastics and other industries. (Lec/Workshop) Pre: permission of instructor.

**577, 578 Seminar in Sensors and Surface Technology (1)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U only.

**591, 592 Special Problems (1-6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**599 Master's Thesis Research (1-9)**

Number of credits is determined each semester in consultation with the major professor. (Independent Study) S/U credit.

**614 Advanced Chemical Engineering Thermodynamics (3)**

Continuation of 513. (Lec. 3) Pre: 513. In alternate years.

**641 Transport Phenomena II (3)**

Steady, unsteady, and multidimensional heat conduction; convection. Mass transport at low and high fluxes; diffusion and chemitheaty; approximate methods for heat and mass transfer problems. (Lec. 3) Pre: 541 or permission of instructor. In alternate years.

**643 Fluid Dynamics (3)**

Advanced problem course dealing with isothermal and non-isothermal flow of compressible and incompressible fluids. (Lec. 3) In alternate years.

**691, 692 Special Problems (1-6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Chemistry (CHM)**

*Chairperson:* Professor Euler

**099 Basic Chemistry Lecture (3)**

Part one of a two-semester 101 sequence designed for students who need additional work in problem-solving skills. Successful completion of part one leads to a special section of 101 in the second semester. (Lec. 3) Not for general education or program credit. S/U credit.

**100 Chemistry of Our Environment (3)**

Elementary chemistry for nonscience majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, pollution, and aspects of industrial chemistry. (Lec. 3) (N)

**101 General Chemistry Lecture I (3)**

Fundamental chemical concepts and principles. Topics include states of matter, stoichiometry, reactivity, atomic structure, thermochemistry, bonding, molecular structure and solutions. Not open to students with credit in 103 or 191. (N)

**102 Laboratory for Chemistry 101 (1)**

Experimental applications of chemical concepts and reactivity emphasizing safety and technique. Experiments follow the content of 101. (N)

**103 Introductory Chemistry Lecture (3)**

One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. (Lec. 3) Not open to students with credit in 101 or 191. (N)

**105 Laboratory for Chemistry 103 (1)**

Fits course content of 103. (Lab. 3) Pre: credit or concurrent enrollment in 103. (N)

**112 General Chemistry Lecture II (3)**

Chemical kinetics, equilibrium, elementary thermodynamics and electrochemistry integrated with descriptive chemistry and practical applications. (N)

**114 Laboratory for Chemistry 112 (1)**

Experiments follow the content of 112. (N)

**124 Introduction to Organic Chemistry (3)**

Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as amino acids and proteins, carbohydrates, fats, and waxes. (Lec. 2, Lab. 3) Pre: 101, 102 or 103, 105, and concurrent enrollment in 126 required when curriculum specifies laboratory. Not open to chemistry or chemical engineering majors. (N)

**126 Laboratory for Chemistry 124 (1)**

Introduction to chemistry procedures, with emphasis on properties of substances of physiological significance. (Lab. 3) Pre: credit or concurrent enrollment in 124. Not open to chemistry or chemical engineering majors.

**191 General Chemistry (5)**

Atomic theory and structure, stoichiometry, chemical reactions, thermochemistry, bonding and states of matter. Laboratory experiments illustrate basic procedures, concepts, and principles. Recommended for chemistry majors. (Lec. 4, Lab. 3) Not open to students with credit in 101. (N)

**192 General Chemistry (5)**

Continuation of 191. Principles of kinetics, equilibrium, and thermo-dynamic integrated with descriptive chemistry and qualitative analysis. Laboratory experiments parallel lecture topics. (Lec. 4, Lab. 3) Not open to students with credit in 112. (N)

**212 Quantitative Analysis (4)**

Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. (Lec. 3, Lab. 3) Pre: 112 and 114.

**226 Organic Chemistry Laboratory (2)**

Common techniques and typical preparative methods in both aliphatic and aromatic series. (Lab. 6) Pre: concurrent enrollment in 228. Not open to students with credit in 229 or 230.

**227 Organic Chemistry Lecture I (3)**

General principles and theories with emphasis on classification, nomenclature, methods of preparation, and characteristic reactions of organic compounds in aliphatic series. (Lec. 3) Pre: 112 and 114 or 192.

**228 Organic Chemistry Lecture II (3)**

Continuation of 227 with emphasis on the aromatic series. (Lec. 3) Pre: 227.

**229 Organic Chemistry Laboratory I (1)**

Common techniques and typical preparative methods in aliphatic series. (Lab. 3) Pre: credit or concurrent enrollment in 227.

**230 Organic Chemistry Laboratory II (1)**

Continuation of 229 with emphasis on the aromatic series. (Lab. 3) Pre: 229 or equivalent and credit or concurrent enrollment in 228. Only for students requiring a second credit of organic laboratory.

**291 Organic Chemistry (4)**

Development of principles and theory through an examination of structure, nomenclature, and reactions of organic compounds. (Lec. 3, Lab. 3) Pre: 192 or permission of instructor. Not open to students with credit in 227.

**292 Organic Chemistry (4)**

Continuation of 291 with extension to several additional families of compounds. (Lec. 3, Lab. 3) Pre: 291. Not open to students with credit in 228.

**335 Physical Chemistry Laboratory (2)**

Physical chemical properties of gases, liquids, and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors. (Lab. 4) Pre: 431. May be taken concurrently with 431.

**353, 354 Undergraduate Research (1–6 each)**

Methods of approach to a research problem. Literature, laboratory work, and a report of an original problem or problems. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**391 Forensic Science Overview (1)**

A seminar/ discussion group designed to introduce students to the areas and issues in Forensic Science. Students seeking a forensic science minor should attend this weekly seminar two semesters. (Lec. 1) May be repeated for a total of 3 credits.

**401 Intermediate Inorganic Chemistry (3)**

Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. (Lec. 3) Pre: 432.

**402 Physical Inorganic Laboratory (2)**

Synthesis of inorganic compounds emphasizing inert atmosphere and vacuum line techniques; characterization by spectroscopic and electromechanical techniques. (Lab. 6) Pre: 401.

**412 Instrumental Methods of Analysis (3)**

Theory and application of optical and electrical instruments to solution of chemical problems: flame photometry, emission spectroscopy, ultraviolet, visible, and infrared spectrophotometry, colorimetry, turbidimetry, nephelometry, fluorometry, potentiometry, voltametric titration methods. (Lec. 3) Pre: 228 and credit or concurrent enrollment in 432.

**414 Instrumental Methods of Analysis Laboratory (2)**

Applications of instrumental methods to the solution of problems in analytical chemistry. (Lab. 6) Pre: credit or concurrent enrollment in 412.

**425 Advanced Organic Laboratory (2)**

Techniques in organic chemical research, including handling air sensitive chemicals, flash chromatography, and instrumental methods of structure determination. Separation of mixtures and identification of components by infrared and nuclear magnetic spectroscopies. (Lab. 6) Pre: 292 or 226 and 228 and credit or concurrent enrollment in 427.

**427 Intermediate Organic Chemistry (3)**

Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. (Lec. 3) Pre: 226, 228, or 292.

**431 Physical Chemistry I (3)**

Gas laws, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. (Lec. 3) Pre: 112 or 192; MTH 142; and PHY 111 and 112 or PHY 213, 214, 285, 286. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry.

**432 Physical Chemistry II (3)**

Atomic theory, quantum chemistry, bonding, molecular interactions, chemical kinetics, kinetic theory, and spectroscopy. (Lec. 3) Pre: 431. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry.

**441 The Chemistry of Biological Systems (3)**

Chemical biology, molecular aspects of biological structures, equilibria, energetics, reactions, and metabolism. (Lec. 3) Pre: 228, 432.

**492 Seminar in Chemistry (1)**

Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. (Seminar) Pre: prior or concurrent enrollment in 432. Not for graduate credit.

**501 Advanced Inorganic Chemistry I (3)**

Systematic analysis of bonding schemes and structural aspects of molecular systems encountered in inorganic chemistry. Special emphasis on electron density distributions, physical methods of analysis, and practical applications of quantum mechanics. (Lec. 3) Pre: 401.

**502 Advanced Inorganic Chemistry II (3)**

Modern inorganic chemistry approached from experimental, theoretical, and descriptive points of view. Includes electronic structure and bonding in coordination chemistry, topology, thermodynamics of complex formation, mechanisms, lanthanides, and actinides. (Lec. 3) Pre: 401 or equivalent.

**504 Physical Methods of Inorganic Chemistry (3)**

Theory and application of numerous experimental techniques used for the elucidation of molecular and electronic structure of inorganic molecules. Primary emphasis is on nuclear magnetic resonance, optical, infrared, Raman, and electron paramagnetic resonance spectroscopies. (Lec. 3) Pre: 401 or permission of instructor.

**511 Advanced Analytical Chemistry I (3)**

Fundamentals of electrochemistry, including a review of electricity and how it passes through conductors, electrochemical cells, electrode reactions, ionic solutions, polarization, transport mechanisms, voltammetry. Statistical treatment of experimental data. (Lec. 3) Pre: 412 or permission of instructor.

**512 Advanced Analytical Chemistry II (3)**

Fundamentals of chromatographic and electrophoretic separations and major spectroscopic techniques. Basic theory, instrumentation, advantages, limitations, and applications of these techniques as well as new instrumental developments are discussed. (Lec. 3) Pre: 412 and MTH 243.

**519 Theoretical Concepts in NMR (3)**

The physical concepts of NMR phenomena are presented, beginning with signals generated in the probe, carried through the spectrometer console, into the computer, and finally represented as a spectrum. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or permission of instructor.

**520 Interpretation of On-Dimensional and Two-Dimensional NMR Spectra (3)**

Uses of chemical shifts and coupling constants are presented for interpreting one-dimensional (1D) and two-dimensional (2D) proton and carbon spectra. Includes relaxation time measurements, decoupling, and simple 2D interpretation. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or CHM 519 or permission of instructor.

**521 Advanced Organic Chemistry I (3)**

Emphasis on fundamental organic structure theory and reaction mechanisms. (Lec. 3) Pre: 226 and 228 or equivalent.

**522 Advanced Organic Chemistry II (3)**

Modern synthetic reactions and their application to such areas as natural products. (Lec. 3) Pre: 521 or permission of instructor.

**524 Interpretation of Two-Dimensional NMR Spectra (3)**

Covers the theoretical and practical aspects of two-dimensional (2D) NMR. Includes pulse sequences, instrument setup, and chemical applications. (Lec. 3) Pre: 519 and 520 or permission of instructor.

**531 Advanced Physical Chemistry I (3)**

Principles and applications of chemical thermodynamics and chemical statistical thermodynamics. Includes the three laws of thermodynamics, statistical distributions, statistical thermodynamic ensembles and fluctuations. Applications to ideal gases and crystals, real fluid, and chemical equilibrium. (Lec. 3) Pre: 432 or permission of instructor.

**532 Advanced Physical Chemistry II (3)**

Principles and applications of quantum chemistry. Includes the formal development of quantum theory and applications to electronic structure as well as other problems of chemical interest. (Lec. 3) Pre: 432 or permission of instructor.

**551 Nonthesis Master's Research (3)**

Research on original problem for fulfillment of research requirement of nonthesis master's degree. Literature survey, laboratory work, and detailed report required. (Independent Study) Pre: permission of chairperson.

**552 Nonthesis Master's Research (2-3)**

Research on original problem for fulfillment of research requirement of nonthesis master's degree. Literature survey, laboratory work, and detailed report required. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. A minimum of 6 credits is required of students who have chosen the thesis option for the master's degree. (Independent Study) S/U credit.

**608 Inorganic Reaction Mechanisms (3)**

Kinetics and mechanisms of reactions in aqueous solution: techniques, results, and theoretical interpretation. Instrumentation for studying rapid reactions in solution, relaxation methods, electron transfer rates, hydrolytic and solvolytic reactions, metal ion complexation, reactions of biochemical significance. (Lec. 3) Pre: 502 or permission of instructor.

**616 Applied Analytical Techniques (3)**

Application of analytical instrumentation and techniques to practical problems. Limitations and specific difficulties of analyzing complex matrices in

practical research. Problem-oriented presentation. (Lec. 3) Pre: 511 and 512 or permission of instructor.

**618 Theory of Separations (3)**

Companion to 616. In-depth presentation of theory of separation processes. Emphasis on methods development, advanced topics, and current advances using gas and liquid chromatography. (Lec. 3) Pre: 511 or permission of instructor.

**621 Advanced Topics in Physical Organic Chemistry (3)**

Mechanistic aspects of organic chemistry: molecular orbital theory, thermal and photochemical cycloadditions and rearrangements. Consideration of carbenes, nitrenes, and free radicals. Evaluation of steric, stereoelectronic, and secondary orbital effects. (Lec. 3) Pre: 521 and 522 or permission of instructor.

**623 Advanced Topics in Synthetic Organic Chemistry (3)**

Advanced topics in the synthetic aspects of organic chemistry. Synthetic reactions and techniques, strategies, and design. Conformational and stereochemical analyses, asymmetric synthesis, and natural product syntheses. (Lec. 3) Pre: 521 and 522 or permission of instructor.

**642, 643, 644 Graduate Seminar (1 each)**

Results of detailed literature surveys are presented orally and in writing. Required for candidates for advanced degrees in chemistry. (Seminar) S/U credit.

**691 Special Topics (1-3)**

Covers special research topics of interest. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 6 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Chemistry Topics for Teachers (0-3)**

Especially designed for teachers of physical sciences. Basic topics of chemistry from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

**Chinese (CHN)**

*Chairperson:* Professor Morello

**101 Beginning Chinese I (3)**

Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Chinese is required. (F)

**102 Beginning Chinese II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate Chinese I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate Chinese II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**Civil and Environmental Engineering (CVE)**

*Chairperson:* Professor G. Veyera

**220 Mechanics of Materials (3)**

Theory of stresses and strains, thin-walled cylinders, beam deflections, columns, combined bending and direct stresses, joints, and indeterminate beams. (Lec. 3) Pre: MCE 262 or concurrent enrollment.

**221 Mechanics of Materials Laboratory (1)**

Introduction to the physical and mechanical properties of civil engineering construction materials including steel, wood, portland cement concrete, bituminous asphalt concrete, and polymers. Experimental evaluation of fundamental material properties and behavior under a variety of controlled laboratory conditions. (Lab. 3) Pre: credit or concurrent enrollment in 220. Required for civil engineering students only.

**250 CADD for Civil Engineers (3)**

Operating system issues, basic elements of Computer-Aided Design and Drafting (CADD): creation of 2-D and 3-D models, solid modeling, rendering and animation, applications of CADD in civil engineering design. (Lec. 3) Pre: EGR 106. Preference given to students enrolled in the CVE undergraduate degree program.

**251 CADD Laboratory for Civil Engineers (1)**

Operating system issues; implementation of Computer-Aided Design and Drafting (CADD) fundamentals; development of 2-D and 3-D models; surface modeling, rendering and animation. (Lab. 3) Pre: EGR 106 and credit or concurrent enrollment in 250. Preference given to students enrolled in the CVE undergraduate degree program.

**315 Surveying I (3)**

Theory and practice of plane surveying including use, care, and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork, and topography. (Lec. 2, Lab. 3) Pre: MTH 141.

**334 Construction Planning and Specifications (3)**

Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. (Lec. 3) Pre: 220. Offered in fall of odd-numbered years.

**346 Transportation Engineering (3)**

Concepts of transportation planning and design as well as traffic analysis techniques are covered with respect to Multi-Mode travel within transportation systems. (Lec. 3) Pre: 220.

**347 Highway Engineering (3)**

Design of modern highways and streets including plannings, location, geometric layout, drainage structures, bituminous materials, pavement structure, construction, operation, maintenance and rehabilitation. (Lec. 3) Pre: 346.

**348 Highway Engineering Laboratory (1)**

Highway capacity analysis, computer applications of geometric design, soil resilient modulus test, L. A. abrasion test, asphalt viscosity test, Marshall and Superpave mix-design, pavement management lab, and field trip. (Lab. 3) Pre: credit or concurrent enrollment in 347.

**354 Structural Engineering (4)**

Introduction to structural analysis and design, statically determinate systems, trusses, beams, frames, influence lines, deflections, conjugate beam, energy methods, statically indeterminate systems, force method, slope deflection, moment distribution, introduction to stiffness method. (Lec. 4) Pre: 220.

**370 Hydraulic Engineering (3)**

Applied hydraulics of flow in closed conduits and open channels: river and groundwater hydraulics. Analysis of hydraulic structures. Reservoir design. Principles of hydrology. (Lec. 3) Pre: MCE 354.

**371 Hydraulic Engineering Laboratory (1)**

Closed conduit flow measurements, pipe networks, evaluation of centrifugal pumps and characteristics, open channel flow measurements, development of gradually varying and rapidly varying flow profiles, computer implementation for design. (Lab. 3) Pre: MCE 354 and credit or concurrent enrollment in 370.

**374 Environmental Engineering (3)**

Water supply and treatment systems, sewerage treatment of municipal and industrial waste waters, stream pollution, groundwater analysis, air pollution and disposal of solid waste materials. (Lec. 3) Pre: MTH 243 or permission of chairperson.

**375 Environmental Engineering Laboratory (1)**

Laboratory studies including measurement of environmental contaminants as well as various treatment processes such as granular media filtration. Interpretation, evaluation, and engineering applications of test data. (Lab. 3) Pre: credit or concurrent enrollment in 374.

**381 Geotechnical Engineering (3)**

Engineering properties of soils, seepage, consolidation theory, calculation of stresses, failure theories, shear strength of sand, shear strength of clay.

Introduction to foundation engineering and geosynthetics. (Lec. 3) Pre: 220 and credit or concurrent enrollment in MCE 354. Professor Kovacs' section is Writing Intensive [WI].

**382 Geotechnical Engineering Laboratory (1)**

Laboratory studies of physical properties and behavior of soils: index properties, compaction, consolidation, and shear strength. Interpretation, evaluation, and engineering applications of test data. Introduction to foundation engineering and geosynthetics. (Lab. 3) Pre: credit or concurrent enrollment in 381.

**391 Honors Work (3)**

Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. (Independent Study) Pre: junior standing or permission of chairperson.

**422 Offshore Structure and Foundation Design**

See Ocean Engineering 422

**442 Traffic Engineering (3)**

Highway traffic characteristics and methods of providing for an effective, free, and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning and administration. (Lec. 2, Lab. 3) Pre: 347 or permission of instructor.

**443 Intelligent Transportation Systems (3)**

Traffic systems operations/planning strategies; Advanced Transportation Management Systems; Detection Devices; Benefits and Evaluation; In-Vehicle Navigation Theory; Real-Time Dynamic Routing Issues. (Lec. 3) Pre: 346 or permission of instructor.

**450 Simulation Based Design for Civil Engineers (4)**

Advanced concepts of Computer-Aided Design (CADD) as they pertain to a) Digital Prototyping, b) Concurrent Engineering, and c) Continuous Acquisition and Lifecycle Support, Global standards, and file exchange formats. (Lec. 3, Lab. 3) Pre: 220 and 250.

**453 Computer Analysis of Structures (3)**

Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. (Lec. 3) Pre: 353.

**460 Analysis and Design of Metal Structures (3)**

Properties of metal; current design codes; practice for the design of steel structural components; simplified and computer-oriented methods of analysis and design. Nonlinearities. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 354. Not for graduate credit in civil engineering.

**465 Analysis and Design of Concrete Structures (3)**

Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, col-

umns, and frames. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 354. Not for graduate credit in civil engineering.

**466 Structural Concrete Laboratory (1)**

Laboratory on structural concrete and construction technology involved in the materials aspects of the use of concrete. Cement properties, mix design, testing of fresh and hardened concrete, admixtures, reinforcement, concrete failure. (Lab. 3) Pre: 465 or concurrent enrollment in 465. Not for graduate credit in civil engineering.

**470 Water and Wastewater Transport Systems I (3)**

Computer analysis of water storage and transmission. Design of water distribution and wastewater collection systems. (Lec. 2, Lab. 3) Pre: 370 or 374 or permission of instructor.

**471 Water and Wastewater Treatment Systems II (3)**

Development of water quality standards. Design and analysis of physical, chemical, and biological treatment processes and their application to water and wastewater purification systems. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor.

**472 Industrial Air Pollution (3)**

Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection and abatement programs. Air resources management programs. (Lec. 3) Pre: permission of chairperson.

**474 Water Quality Sampling and Analysis (3)**

Laboratory and field work including sampling of surface and groundwater, chemical and biological analyses for water, monitoring, treated effluent quality control, and detection of hazardous contaminants. (Lec. 1, Lab. 6) Pre: 374 or permission of instructor. Offered in spring of odd-numbered years.

**475 Water in the Environment (3)**

Evaluation of water as a resource and its relation to the environment: hydrologic cycle, water budgets, water uses, drought, flood, current water problems. (Lec. 3) Pre: MTH 243 and CVE 374 or permission of instructor. Offered in spring of even-numbered years.

**478 Hazardous Waste Disposal and Solid Waste Management (3)**

Sources, collection, treatment, and disposal of hazardous wastes and solid wastes. Conservation, recovery, and reuse of material. Economics of waste treatment, disposal, and reuse. (Lec. 3) Pre: junior standing or permission of chairperson.



**483 (or OCE 483) Foundation Engineering (3)**

Applications of geotechnical engineering principles to analysis and design of shallow foundations. Topics include foundation types, bearing capacity, settlement analysis, shallow foundations, earth pressures, retaining walls, introduction to deep foundations. (Lec. 3) Pre: 381.

**485 Engineering Geophysics**

See Geosciences 485.

**491, 492 Special Problems (1–6 each)**

Advanced work under supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**495 Civil and Environmental Engineering Systems (3)**

Civil and environmental engineering projects are studied, analyzed, designed, and discussed in areas of water resources, pollution control, geotechnics, structures, and transportation using systems techniques. (Lec. 3) Pre: senior or graduate standing in civil engineering.

**497 Civil Engineering Design I (2)**

Detailed project planning, conceptual design and layout, and environmental impact for the civil engineering integrated capstone design project. Speakers on ethics, professionalism, and professional practice. (Lab. 4) Pre: senior standing. Must be taken immediately prior to 498. Required of all seniors in civil and environmental engineering. Not for graduate credit in civil engineering.

**498 Civil Engineering Design II (3)**

Elements of planning, analysis and design of a civil engineering project integrating the principles learned in previous courses; a group integrated capstone design project involving all major aspects of civil engineering design. (Lec. 1, Lab. 6) Pre: 497 and senior standing. Not for graduate credit in civil engineering.

**545 Pavement Design (3)**

Pavement types; pavement system components; stresses in the pavement structure. Design factors and criteria, pavement stabilization, structural design of flexible and rigid pavements for highways and airports, pavement maintenance and overlay design. (Lec. 3) Pre: 347 or equivalent. Offered in fall of odd-numbered years.

**546 Urban and Rural Transportation**

See Community Planning 546.

**547 Geometric Design of Highways (3)**

Evaluation of alternative designs. Criteria and practices of geometric design; at grade intersections, interchanges, channelization, weaving parking facilities, and road appurtenances; safety considerations, lane balancing, ramps, and terminals. (Lec.

3) Pre: 347 or equivalent. Offered in fall of even-numbered years.

**548 Bituminous Materials and Mix-Design (3)**

Asphalt binder, bituminous mixtures, conventional and superpave mix-design methods, material characterization and testing, fracture, fatigue, and permanent deformation, novel pavement materials and additives, and pavement recycling. (Lec. 2, Lab. 3) Pre: 347 or equivalent. Offered in even-numbered years.

**549 Nonbituminous Transportation Materials and Mix-Design (3)**

Surficial and subgrade soils, mineral aggregates, Portland cement concretes, mix-design methods, material characterization and testing, fracture, fatigue, new nonbituminous pavement materials and additives, and pavement recycling. (Lec. 2, Lab. 3) Pre: 347 or equivalent. Offered in odd-numbered years. Next offered fall 2003.

**551 Finite Element Analysis in Civil Engineering I (3)**

Direct stiffness method. Rayleigh-Ritz and Galerkin methods. Isoparametric elements. Frames, trusses, plane stress and strain. Bending of thin plates. (Lec. 3) Pre: 453 or permission of instructor.

**552 Structural Timber Design (3)**

Study of wood properties and design considerations. Design and behavior of beams, columns, beam-columns, and wood fasteners. Analysis and design of structural diaphragms, shear walls, and box beams. (Lec. 3) Pre: 354.

**560 Structural Design (3)**

Behavior and design of structural systems; selected topics in steel, reinforced concrete, and prestressed concrete. (Lec. 3) Pre: 460 and 465.

**561 Advanced Steel Design (3)**

Selected topics in structural steel design following the LRFD specification, including plate buckling and postbuckling, torsion, plate girders, plastic design, frame stability, tall buildings, composite design, and earthquake-resistant design. (Lec. 3) Pre: 460 or permission of instructor. Offered in alternate years.

**565 Structural Dynamics (3)**

Simplified models and their equations of motion; analytical solution methods; Fourier analysis; Duhamel integral; nonlinearities; computer-oriented solution algorithms and their implementation. Applications. (Lec. 3) Pre: 453. Offered in alternate years.

**568 (or MCE 568) Theory of Plates (3)**

Development of basic plate equations. Classical solution examples of rectangular and circular plates. Additional topics selected from: orthotropic plates, large deflections, finite element, and numerical solutions. (Lec. 3) Pre: 220 and MTH 244.

**570 Sanitary Chemistry (3)**

Application of analytical chemistry to analysis of natural waters; physical chemistry and organic chemistry of aqueous media; chemical principles applicable to operations of sanitary engineering. (Lec. 3) Pre: permission of instructor.

**571 Sanitary Chemistry Laboratory (3)**

Applications of chemical laboratory procedures to control of water and wastewater treatment processes. (Lab. 9) Pre: 570.

**572 Biosystems in Sanitary Engineering (3)**

Microorganisms which constitute the biological systems in water pollution, water purification, and wastewater treatment. Application of principles of microbiology and biochemistry to analysis and design in fields of sanitary engineering and water resources. (Lec. 3) Pre: permission of instructor.

**573 Theory of Water Purification and Treatment (3)**

Principles of modern water purification and engineering practices. Aeration, deodorization, sterilization, coagulation, filtration, water softening, iron removal, disinfection, and corrosion control. (Lec. 3)

**575 Open-Channel Hydraulics (3)**

Analysis of uniform, critical, varied, and unsteady flow in open channels. Principles will be applied to open-channel design. (Lec. 3) Pre: MCE 354.

**581 (or OCE 581) Experimental Geomechanics (3)**

Advanced methods and techniques of geotechnical testing. Behavior of granular and cohesive soils with determination of engineering properties. Interpretation, evaluation, and engineering applications of test data. Emphasis on shearing strength, consolidation, bearing capacity, earth pressures, seepage, and slope stability. (Lec. 3) Pre: 381 or equivalent.

**582 Seabed Geotechnics**

See Ocean Engineering 582.

**583 (or OCE 583) Advanced Foundation Engineering (3)**

Applications of soil mechanics principles to analysis and design of pile foundations, drilled piers, flexible retaining structures, braced excavations, cofferdams, miscellaneous advanced foundation problems. (Lec. 3) Pre: 381 or equivalent.

**584 Designing with Geosynthetics (3)**

Overview of geosynthetic materials, properties, test methods, and current standards. Design methods involving geotextiles, geogrids, geonets, geomembranes, and geocomposites. Applications to problems in geomechanics, geo-environmental engineering, and transportation-related fields. (Lec. 3) Pre: 381.

**585 Soil Dynamics (3)**

Vibration characteristics, wave propagation in soils, foundation vibration theory, foundation design for vibrating loads, vibration isolation, blast vibrations, dynamic soil properties, liquefaction potential, vibratory and dynamic compaction, computer applications. (Lec. 3) Pre: credit or concurrent enrollment in 483 or equivalent.

**586 Geotechnical Design of Waste Containment Systems (3)**

Engineering properties of soil waste. Design of waste containment cover systems, use of geosynthetics, liner and drainage materials, slurry walls, landfills, and leachate collection systems. Landfill design for earthquakes and stability. (Lec. 3) Pre: 381 and credit or concurrent enrollment in 478 or equivalent.

**587 Groundwater Flow and Seepage Pressures (3)**

Hydrodynamics of fluid flow through porous media. Analytical methods for steady and unsteady seepage in aquifers; theoretical analysis with practical modification of seepage problems involving foundations, drainage structures, earth dams, and dewatering. (Lec. 3) Pre: 381 and permission of instructor.

**588 Groundwater Hydrology (3)**

Quantitative methods of groundwater hydrology including determination of aquifer properties and yield. Modeling of groundwater systems for management quantity of water, movement of contaminants, and well design. Field and laboratory measurements. (Lec. 3) Pre: MCE 354 and CVE 381 or equivalent. Offered in spring of even-numbered years.

**591, 592 Special Problems (1–6 each)**

Advanced work under supervision of a member arranged to suit individual requirements of the student. (Independent Study) Pre: permission of chairperson.

**594 Special Topics in Civil and Environmental Engineering (1–3)**

Intensive inquiry into a certain important field of current interest in civil and environmental engineering. (Lec. 1–3) Pre: permission of instructor.

**596 Numerical Methods in Structural Engineering (3)**

Methods of successive approximations and numerical procedures in the solution of stress, vibration, and stability problems in structural members. Non-uniform members, elastic supports, plates, torsion. (Lec. 3) Pre: permission of chairperson.

**599 Master's Thesis Research (1–9)**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**601, 602 Graduate Seminar (1 each)**

Discussions and presentation of papers based on research or detailed literature surveys. (Seminar) Required of all graduate students, with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. S/U credit.

**641 Pavement Evaluation and Rehabilitation (3)**

Pavement performance concepts. Criteria for pavement evaluation. Measurement of pavement distress and structural capacity. Analysis and interpretation of pavement evaluation data. Correlation of data with performance ratings. Formulation and evaluation of maintenance and rehabilitation alternatives. (Lec. 3) Pre: 545 or equivalent. Offered in spring of odd-numbered years. Lee

**651 Design of Highway Bridges (3)**

Design specifications and analysis methods for highway bridges. Loads. Design of steel I-beam bridges, reinforced concrete bridges, and plate girders. Orthotropic analysis. Bridge details and substructure. (Lec. 3) Pre: 561, 465, and 453.

**652 Advanced Topics in Bridge Engineering (3)**

Load and resistance factor design of prestressed concrete bridges. Analysis and design of segmental concrete bridges using the span-by-span and the cantilever methods of construction. Time dependent effects. Long span bridges. Bridge condition assessment and rating. (Lec. 3) Pre: 651 or permission of instructor

**657 Structural Stability (3)**

Introduction; principal forms of equilibrium paths and their stability; conservative elastic systems; buckling of prismatic members; imperfections; plastic deformations; postbuckling of frames and reticulated structures; numerical methods; catastrophe theory. (Lec. 3) Pre: permission of instructor.

**667 Structural Reliability (3)**

Probabilistic applications in structural analysis and design. Statistical models for forces and material strengths. Component and system structural reliability. Random vibration applications in structural engineering. (Lec. 3) Pre: introductory course on probability and 565 or OCE 522, or permission of instructor.

**672 Water Pollution Control and Treatment of Wastewater (3)**

Wastewater characteristics, effects, and purification in natural water, government control strategies and impacts, cost of control, theory and mathematical concepts of secondary and tertiary treatment process, their limitations, and late developments. (Lec. 3) Pre: one year of chemistry and biology, MTH 243 and CVE 572 or their equivalents, and permission of instructor.

**677 Stream and Estuarine Analysis (3)**

Fundamentals and mathematical concepts of physical and biological factors applied to the evaluation of the pollution capacity of streams and estuaries. (Lec. 3) Pre: MTH 244.

**681 Advanced Geotechnical Engineering I (3)**

Advanced study of geotechnical engineering principles and theory. Physical and chemical properties of soils; particulate mechanics; effective stress principle; permeability; steady-state and transient seepage; consolidation; stress distribution; miscellaneous topics. (Lec. 3) Pre: 381 or equivalent and graduate standing.

**682 Advanced Geotechnical Engineering II (3)**

Advanced study of geotechnical engineering principles and theory. Stress-strain behavior; constitutive relationships; failure theories; applications of theories of elasticity, viscoelasticity, and plasticity; shear strength of sands; shear strength of clays; slope stability analysis; miscellaneous topics. (Lec. 3) Pre: 381 or equivalent and graduate standing.

**687 Geotechnical Earthquake Engineering (3)**

Seismology and seismicity; surface faulting and ground motion characteristics; response spectra; dynamic soil properties; dynamic response of soil layers, embankments, and slopes; influence of local soil conditions on site response; evaluation of design earthquakes; response analysis. (Lec. 3) Pre: 483 or equivalent, or concurrent enrollment, and graduate standing.

**688 Marine Geomechanics**

See Ocean Engineering 688.

**691, 692 Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**694 Advanced Special Topics in Civil and Environmental Engineering (1–3)**

Intensive inquiry into a certain important field of current interest in civil and environmental engineering, requiring advanced sophistication of a 600 level course. (Lec. 1–3) Pre: permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Classics (CLA)

*Section Head:* Associate Professor Suter

### 391 Ancient Laughter: The Comic Tradition in Greece and Rome (3)

Introduction to the comic tradition in Western literature through its origins in Greece and Rome. Readings in English translation include examples of comic drama, novel, and satire. (Lec. 3) (A) (F)

### 395 Greek Mythology: Gods, Heroes, and Humans (3)

Nature and function of myth in the ancient world and today: ideas of divinity, relationship of divine to human, origins of cosmos and human society, male and female principles, power hierarchies, coming of age, the heroic experience. Theories of myth analysis. Readings in English translation. (Lec. 3) (A) (F)

### 396 Myths of Rome (3)

Nature and function of myth in Roman society; origins and influence of Romanitas as found in Roman literature: history, epic, lyric, novel. Roman religion: magic, animism, anthropomorphism, gods and goddesses. Readings in English translation. (Lec. 3) (A) (F)

### 397 Greek Myth and Tragedy (3)

Relationship between Greek myth and classical tragedy, birth and evolution of tragedy (ancient, medieval, French, English, American), employment of the same myth for different dramatic and political purposes. Readings in English translation. (Lec. 3) (A) (F)

*See also course listings under Greek and Latin.*

## Communication Studies (COM)

*Chairperson:* Professor S. Wood

### 101 Public Speaking (3)

Development and improvement of fundamentals and attitudes essential to effective and ethical communication. Preparation, organization, and presentation of the fundamentals in various speaking environments. Students demonstrating proficiency may petition for advanced placement. (Lec. 3) (C)

### 103 Interpersonal Communication (3)

Impact of perception, listening, self-acceptance, nonverbal messages, and language on interpersonal communication. Emphasis on improving skills. (Lec. 3) (C)

### 200 The Art of Human Communication (3)

Selected communication theories from classical to contemporary times are examined. Focus on the relationship between cultures and communication theories. Emphasis on application of theoretical principles to contemporary communication situations. (Lec. 3) (L)

### 205 Great American Speeches (3)

The study of historically significant ideas, issues, and causes through the critical analysis of selected American speeches. (Lec. 3) (L)

### 206 Introduction to Communication Studies (3)

Survey of the major areas within the field of speech communication. Emphasis on developing the student's ability to identify, define, formulate, investigate, and describe problems and phenomena within the discipline. (Lec. 3)

### 210 Persuasion: The Rhetoric of Influence (3)

Analysis of communication influencing beliefs, attitudes, and/or behavior. Investigation of rhetorical elements of logical, emotional, and ethical appeals. Study of elements critical for effective producers and consumers of persuasion. (Lec. 3) (L)

### 215 Argumentation and Debate (3)

Introduces argumentation theory through the model of academic debate. Stresses critical-thinking skills including analysis, research, organization, and written and oral presentations. Debates are conducted on important social and political issues. (Lec. 3)

### 216 Forensic Workshop (1)

Open to students participating in speech or debate activities. (Practicum) Pre: permission of the director of debate. May be repeated for a maximum of 4 credits.

### 220 Small Group Communication (3)

The study of communicative functions in the small group setting. Includes group dynamics, leadership, problem solving, and decision making. Emphasis on theory and application. (Lec. 3) (S)

### 231 Oral Interpretation of Literature (3)

Recognition and appreciation of content and communication of thought and emotion through oral reading. Practice in the analysis and interpretation of poetry and prose fiction. (Lec. 3) (A)

### 300 Communication Criticism (3)

Study of select methods in the evaluation of communication. Critical methods include but are not limited to rhetorical, media, cultural and various critical theories of race and gender. 300A Rhetorical Criticism; 300B Television Criticism. Pre: 200, 205, 206 or 210. May not be repeated.

### 302 Advanced Public Speaking (3)

Advanced study of public speaking and speech writing. Speaking in television and business settings. Speaking with a manuscript, writing speeches for others, and speech criticism. (Lec. 3) Pre: 101.

### 306 Research Methods in Communication (3)

Basic concepts and techniques of communication research. Emphasis on analysis of existing commu-

nication research and on application of research processes to communication problems or phenomena. (Lec. 3) Pre: 206 or permission of instructor.

### 310 Contemporary Oral Communication (3)

Analysis of contemporary rhetorical theories as they relate to speaking in business, civil rights, education, government, labor, law, and religion. Focus each semester on a critical contemporary issue. (Lec. 3) May be repeated for credit.

### 314 Nonverbal Communication (3)

Examines nonverbal communication codes, including their structures, usages, and interrelationships. Stresses student understanding, analysis, and application of nonverbal communication through lecture, discussion, and experiential activities. (Lec. 3) Pre: junior standing and 101 or 103 or permission of instructor.

### 317 Advanced Argumentation and Debate (3)

Analysis of the theories of argumentation through specialized forms of debate. Use of legislative, legal, and other situationally specific forms of debate to apply the theories of argumentation. (Lec. 3)

### 320 Oral Communication for Business and Professions (3)

Examination of business and organizational communication. Emphasis on channels of communication, communication barriers, leadership, and the development of communication skills for business and professions. (Lec. 3)

### 332 Oral Interpretation of Poetry (3)

Practice in the oral interpretation of poetry through oral performance and written analysis. (Lec. 3) Pre: 231 or permission of instructor.

### 333 (or AAF 333) Oral Interpretation of Black Literature (3)

Study and oral presentation of literature by black American authors. Class performances, discussion, reports, and analysis of the literature. (Lec. 3)

### 337 Intercultural Communication (3)

Study of cultural similarities and differences as they affect communication within and across cultural boundaries. (Lec. 3)

### 340 Electronic Media Programming (3)

Overview of various aspects of the operation of radio, television, and cable TV, including industry structure, audience measurement (ratings), programming, and promotion. (Lec. 3) Pre: junior standing.

### 341 Documentary Pre-production (3)

Understanding the documentary form in both its historic and modern context. Basic camera, shooting, and interviewing techniques are studied. Research and writing a documentary proposal required. (Lec. 3) Pre: junior standing.

**342 Documentary Production (3)**

Builds on work completed in 341. Field camera operation, lighting, archival materials, writing, directing, producing, and editing a documentary short on a topic researched and pre-produced in 341. (Lec. 3) Pre: 341.

**345 Gender and Communication (3)**

Survey of theories and research on gender and communication. Examines interface of gender and human interaction in interpersonal, group (including family), educational, organizational, mass media, and social movement contexts. (Lec. 3)

**346 Social & Cultural Aspects of Media (3)**

Explores social and cultural dimensions of media. Includes case studies of print, television, film, video, and computer-mediated communication. (Lec. 3) Pre: junior standing or permission of instructor.

**354 International Business Communications Exchange**

See Business 354.

**360 Audio Communication in the Media (3)**

Examination of techniques and production of audio communication. Explores elements of audio communication including radio drama, commercials, news reporting, sports commentary, monologues, narration and voice-over work. (Lec. 3)

**391, 392 Honors Work (1–3 each)**

Thesis work or an equivalent independent project under faculty supervision for honor students. (Independent Study) Pre: admission to departmental Honors Program.

**400 Rhetoric (3)**

Inquiry into standards for the evaluation and improvement of instrumental discourse. Detailed considerations of invention, disposition, and style in oral and written communication. (Lec. 3)

**402 Leadership and Motivation**

See Management 402.

**403 Advanced Interpersonal Communication (3)**

Critical study of major issues and theories of interpersonal communication. Focuses on history, models, and research, including conversation, influence, intimacy, language, and relationships. (Lec. 3) Pre: 103 or permission of instructor.

**410 Humor in Communication (3)**

Examination of genres, history, content, structure and performance styles of presentational comedy. Exploration of role of humor in society. Development of original materials for public performance. (Lec. 3) Not for graduate credit.

**415 The Ethics of Persuasion (3)**

Relation of persuasion to ethics is examined. Purposes, means, results, and contexts are considered

in making rhetorical judgments of interpersonal, political, and institutional communication. (Lec. 3)

**420 Seminar in American Public Address and Criticism (3)**

Study of selected American speakers, speeches, and/or movements. Rhetorical analysis used to measure the impact of speakers, speeches, and social and political movements. (Seminar)

**430 Political Communication (3)**

Analysis of political communication in campaign and nonelection situations. Examination of ghost writing; content analysis, strategies, image making of political speaking; TV and radio presentations; influences on and effects of political communication. (Lec. 3)

**435 Directing Group Performance of Nondramatic Literature (3)**

Practice in Reader's Theatre and Chamber Theatre. Emphasis on direction as a rhetorical device in group work with nondramatic literature and compilation of scripts for individual and group performance. (Lec. 3) Pre: 231. In alternate years.

**437 Managing Cultural Differences in Organizations (3)**

Exploring how to manage cultural differences in organization and to adapt to culturally diverse organizations by applying the skills of intercultural sensitivity and intercultural competence. (Lec. 3) Pre: 337 or permission of instructor. Not open to students who have credit for MGT 453, 655, or 657.

**440 Telecommunications Processes and Audience Behavior (3)**

Surveys theories and research concerning role of electronic mass media in contemporary society. Focuses on interplay between mass media content and audience behavior; provides framework for analyzing current telecommunications issues. (Lec. 3) Pre: 210 or permission of instructor.

**445 Television Advertising (3)**

Examination of theory and practice in television advertising. Students will acquire and analyze commercials made by professionals and create and produce television advertisements. (Lec. 3) Not for graduate credit.

**446 Media Theory (3)**

Examines major theoretical approaches to the study of media. Includes perspectives on media institutions, media texts, and media audiences. (Lec. 3)

**447 Communication and Global Society (3)**

Exploring various aspects of the relationship between communication and globalization, including a new sense of community, cultural diversity, cultural identity, global media, and global citizenship. (Lec. 3) Pre: six credits in communication or permission of instructor.

**450 Organizational Communication (3)**

Surveys theory and practice of communication in organizations. Examines interface of organizational, management, and communication theories. Explores human interaction, flows and formats in organizations; stresses student analysis of organizational communication. (Lec. 3) Pre: 320.

**460 Communication and Conflict Intervention (3)**

An examination of the role of communication theories in conflict intervention in interpersonal, group, and organizational settings. Emphasis on applying theories through simulations, role plays, case studies, and discussions. (Lec. 3) Pre: 103 or 220.

**465 Race, Politics and Media (3)**

Exploration of the complex dynamics of race relations and political discourse as contextualized in the media. Rhetorical methods of analysis are used to study contemporary media coverage of race issues. (Lec. 3)

**471, 472 Internship in Communication Studies (1–3 each)**

Provides the student with direct supervised participation in a variety of communication situations and occupations. (Practicum) Pre: 18 credits in communication studies and permission of chairperson. S/U only.

**491, 492 Special Problems (1–3 each)**

Selected areas of study pertinent to communication. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) Pre: permission of chairperson.

**501 Communication Theory (3)**

Discusses the significance of theory to the understanding of communication. Gives an overview of major theories applicable to the study of communication. Explores the relationship between theory and research and investigates emerging theories and applications of theory to emerging forms of communication. (Seminar)

**502 Communication Methods (3)**

Exploring research methods to acquire ability to understand communication phenomenon, critique and analyze the value of communication studies, and to independently conduct research to answer communication questions and problems. (Seminar)

**510 Seminar in Interpersonal Communication (3)**

In-depth examination of a topic in interpersonal communication. Students will review and discuss appropriate literature and author a major research paper. (Seminar) May be repeated under a different topic. Pre: graduate standing or permission of instructor. Every second or third semester.

**520 Seminar in Media Studies (3)**

In-depth examination of a topic in mass or electronic media, or new information technologies.

Studies will review and discuss appropriate literature and author a major research paper. May be repeated under a different topic. (Seminar) Pre: graduate standing or permission of instructor.

### **530 Seminar in Organizational Communication (3)**

In-depth examination of a topic in organizational communication. Students will review and discuss appropriate literature and author a major research paper. May be repeated once under a different topic. (Seminar)

### **540 Seminar in Public Discourse (3)**

In-depth examination of a topic in public discourse. Students will review and discuss appropriate literature and author a major research paper. May be repeated once under a different topic. (Seminar)

### **591, 592 Independent Study (1–3 each)**

Students will work with faculty on independent research projects designed to enhance their research skills and further emphasize the content area most germane to the student.

### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Communicative Disorders (CMD)**

*Chairperson:* Professor Singer

### **260 Introduction to Speech and Language Disorders (3)**

Introduction to speech and language disorders in children and adults; overview of symptomatology, assessment, and treatment; study of the professions of speech-language pathology and audiology. For students in communicative disorders, education, psychology, and other health-related fields. (Lec. 3)

### **261 Survey of Hearing and Deafness (3)**

Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiometry, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. (Lec. 3)

### **372 Auditory and Speech Mechanisms (3)**

Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. (Lec. 3) Pre: junior standing.

### **373 Phonetics (3)**

International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. (Lec. 3) Pre: junior standing.

### **374 Communication Processes (3)**

Psychological and cognitive processes basic to language and communication; models of language processing; explorations into biological and social bases. (Lec. 3) Pre: junior standing.

### **375 Language Development (3)**

Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and habilitative programs for children with deviant language development. (Lec. 3) Pre: junior standing.

### **376 Hearing and Speech Science (3)**

Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. (Lec. 3) Pre: 373.

### **377 Functional Neuroanatomy (3)**

Examination of the brain and spinal cord, emphasizing connection and functions of the neural system. This course is designed for communicative disorders majors. (Lec. 3) Pre: 372 and junior standing.

### **440 Advanced Head and Neck Anatomy**

See Dental Hygiene 440.

### **454 Rehabilitative Audiology (3)**

Theoretical and methodological approaches to aural rehabilitation of the adult with impaired hearing. Topics include use of amplification, speechreading, assistive listening devices, auditory training, and case management. (Lec 3) Pre: 260, 261 and three of the following—372, 373, 374, 375, 376, and senior or graduate standing with 551 as prerequisite for graduate standing.

### **465 Clinical Methods in Communicative Disorders (4)**

Observation of diagnosis and treatment of communicative disorders; developing interviewing, report writing, and counseling techniques; introduction to diagnostic procedures; establishing therapeutic goals, treatment, and remediation of various disorders. (Lec. 3, Lab. 2) Senior or graduate standing only. Pre: 260, 261, and three of the following—372, 373, 374, 375, 376. Not for graduate credit in communicative disorders.

### **475 Gestural Communication (3)**

Visual language systems with emphasis on the chirology and syntax of Ameslan, and levels of language among deaf communicators; finger spelling and sign language for educational, rehabilitative, and artistic goals studied. (Lec. 2, Lab. 2) Pre: junior or graduate standing.

### **491, 492 Special Problems (1–3 each)**

Selected areas of study pertinent to communicative disorders. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) 491: S/U credit.

### **493 Cultural and Linguistic Diversity in Communicative Disorders (3)**

Application of concepts and information from the study of cultural and linguistic diversity to issues involving communicative incompetence and disorder. (Lec. 3)

### **504 Research in Communicative Disorders (3)**

Types of research in speech pathology, audiology, and communication science; critiques of representative models with special emphasis on experimental research; individual pilot projects or master's thesis. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor.

### **551 Measurement of Hearing I (4)**

Diagnostic protocols for routine audiologic assessment including pure tone, speech, and immittance procedures. Discussion of etiology and symptomatology of hearing disorders. (Lec. 3, Lab. 2) Pre: 372, 373, 374, 375, and 376; graduate standing or permission of instructor.

### **552 Measurement of Hearing II (4)**

Behavioral assessment of peripheral and central auditory function, including speech recognition, immittance, site-of-lesion, otoscopy, speechreading, and pseudohypacusis testing. (Lec. 3, Lab. 2) Pre: 551 or permission of instructor. In alternate years.

### **553 Pediatric Audiology (3)**

Theoretical and methodological approaches to the identification and management of children with auditory disorders. Topics discussed include auditory development, audiometric evaluation, and hearing aids. (Lec. 3) Pre: 551 or permission of instructor. In alternate years.

### **555 Hearing Aids I (3)**

Introduction to wearable hearing aids. Topics include: basic electronics, speech acoustics, types of hearing aids and their appropriateness, electroacoustics and psychoacoustics, and an overview of electroacoustic selection. (Lec. 2, Lab. 2) Pre: 372, 373, 374, 375, and 376; graduate standing or permission of instructor. In alternate years.

### **556 Hearing Aids II (3)**

Application of technological and behavioral strategies in fitting hearing aids, including aid selection and delivery, counseling, assessment of wearer performance, marketing, and legal issues. (Lec. 3) Pre: 555. In alternate years.

### **557 Electrophysiological Measures in Audiology (4)**

Basic electrophysiological assessment procedures and instrumentation. Otoacoustic emissions, electrocochleography, auditory brainstem response, and middle, late, and steady-state auditory evoked potentials. (Lec. 3, Lab. 2) Pre: 551 or permission of instructor. In alternate years.

**560 Voice Disorders (3)**

Etiology and symptomatology of vocal pathology; intervention strategies for organic and functional voice disorders; emphasis on rehabilitation team approach to voice-resonance problems associated with cleft palate. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor.

**561 Phonological Disorders (3)**

Assessment, design, and implementation of therapeutic management programs for various speech production disorders at the articulatory and phonological levels. (Lec. 3) Pre: 372, 373, 374, 375, or equivalent, or permission of instructor.

**564 Language Disorders in School-Aged Children (4)**

Study of communication deficits in learning-disabled school-aged children; differential diagnoses; assessment of cognitive functioning; language processing and discourse; and therapeutic strategies for training abstract and functional language. (Lec. 3, Lab. 2) Pre: graduate standing or permission of instructor.

**569 Test and Measurement in Speech-Language Pathology (3)**

Procedures for evaluation and diagnosis in speech-language pathology. Psychometric considerations in testing. Implications of evaluation information for differential diagnosis, prognosis, referrals, and therapeutic programs. Multicultural considerations in the diagnostic process. (Lec. 4) Pre: 372, 373, 374, 375, 465 or equivalent; graduate standing or permission of instructor.

**570 Clinical Practicum in Communicative Disorders (1–5)**

Supervised assessment and rehabilitation procedures with persons experiencing communicative disorders in speech-language pathology and/or audiology. Practicum sites scheduled on campus and within hospital, school, institutional, and private settings. (Practicum) Pre: graduate standing, 25 observation hours, and appropriate course work.

**571 Medical Speech-Language Pathology (1)**

Prepares students to work as speech-language pathologists in medical settings. Focus on scope of practice, ethics, and the coordination, prioritizing, and delivery of clinical services in an interdisciplinary environment. (Seminar) Pre: graduate standing. S/U only.

**572 Pathologies of the Auditory System (3)**

Diagnostic implications of audiometry for various organic disorders; supportive audiological information relevant to medical and surgical interventions; differential data associated with otosclerosis, Meniere's disease, VIIIth cranial nerve tumors, and malingering. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. In alternate years.

**573 Contemporary Issues in Audiology (3)**

Critical review of current research and controversial issues within the profession; student selects one topic for independent study. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. In alternate years.

**580 Augmentative and Alternative Communication (2)**

Review of unaided (manual) approaches to communication. Discussion of aided methods using communication boards or other mechanical electronic devices. (Lec. 2) Pre: graduate standing or permission of instructor.

**581 Dysphagia (3)**

Basic introduction to the knowledge and skills needed by speech-language pathologists providing clinical services to dysphagic patients in medical settings. (Lec. 1) Pre: graduate standing or permission of instructor.

**582 Motor Speech Disorders (3)**

Neurosystem pathologies and mechanisms affecting speech. Prepares students to diagnose, assess, and treat adults with acquired motor speech disorders. (Lec. 4) Pre: graduate standing or permission of instructor.

**584 Language Disorders in Developmentally Young Children (4)**

Study of communication deficits in developmentally young and multi-handicapped children; types of language problems; differential diagnoses; assessment of conceptual requisites and concrete language skills; and interactive therapeutic strategies. (Lec. 4) Pre: graduate standing or permission of instructor.

**585 Language Disorders in Adults (3)**

Provides basic information on the characteristics, assessment, and treatment of adults with acquired language disorders secondary to stroke, head injury, and progressive neurological diseases. (Lec. 4) Pre: graduate standing or permission of instructor.

**592 Disorders of Fluency (3)**

Study of nature and causes of stuttering; analyses of current theories and research concerning stuttering and cluttering; development of a rationale for diagnosis, case selection, and intervention. (Lec. 3) Pre: graduate standing and/or permission of instructor.

**593 Multicultural Issues in Communicative Disorders (1)**

Exposure to state-of-the-art clinical practices with individuals from diverse backgrounds. Attention paid to developing "cultural sensitivity" and an awareness of the cultural and bilingual influences on assessment and intervention decisions. (Lec. 1)

**594 Counseling in Communicative Disorders (1)**

Considerations in counseling in speech-language pathology and audiology. Multiple factors influencing communication between client/family and professionals. Study of clinical skills in counseling. Ethical and professional issues. (Lec. 1) Pre: graduate standing or permission of instructor. In alternate years.

**595 Instrumentation and Computer Use in Communicative Disorders (1)**

Topics in applied instrumentation and computer use for students in speech-language pathology and audiology. Practical experience in calibration of instruments and the use of current professional software. (Lab. 2) Pre: graduate standing or permission of instructor. In alternate years.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Community Planning (CPL)**

*Chairperson:* Professor Atash

**210 Introduction to Planning and Community (3)**

Introductory course for community planning minor. History of urban development, management and planning of cities and towns in the United States. Discussion of contemporary planning issues in urban areas. (Lec. 3)

**300 Introduction to Global Issues in Sustainable Development (3)**

Role of the United States in development assistance to foreign nations. Topics include foreign aid, sustainable development, transfer of technology, and international career opportunities. (Lec. 3)

**391, 392 Directed Study in Community Planning (1–3)**

Independent work in planning for individual students or groups. (Independent Study) Pre: 210 or 410 or permission of instructor.

**397 Field Work in Community Planning (1–3)**

Field work as arranged. The student works as a part-time intern in a planning agency under the supervision of a faculty advisor. (Practicum) Pre: 210 or 410 or permission of instructor.

**410 Fundamentals of Community Planning Practice (3)**

The development of the planning profession in the United States, and the elements of planning practice. The application of planning principles, methods, and techniques pertinent to contemporary urban problems. (Lec. 3) Not for graduate credit.

**434 (or MAF 434) Introduction to Environmental Law (3)**

Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development.

**487 International Development Internship (1-6)**

Supervised participation in programs related to sustainable international development. Minimum 35 hours of internship per credit. (Practicum) Pre: 300 and/or permission of instructor. Not for graduate credit. S/U only.

**495 International Development Seminar (3)**

Seminar in sustainable international development for advanced-level students interested in international development. (Seminar) Pre: 300 and/or permission of instructor. Not for graduate credit.

**498 Community Planning Seminar (3)**

Seminar in community planning from an interdisciplinary perspective. (Seminar) Pre: 210 or 410 or permission of instructor. Not for graduate credit.

**501 Introduction to Community Planning Practice (3)**

The development of community planning in the United States, history of governmental planning and evaluation of the planning profession, and the elements of planning practice. (Lec. 3)

**510 Community Planning and Political and Social Change (3)**

Introduction to systems and central theories of determinants for social and planned change in urban and urbanizing communities. Focus on methodologies for political and social assessments. (Seminar) Service learning. Pre: 523 or permission of instructor.

**511 Planning and Natural Environmental Systems (3)**

Introduction to theories, methodologies, and substantive concerns of environmental resource analysis with attention given to coastal environmental issues. Focus on land, soils, watersheds, water quality, vegetation, air quality, wildlife, noise pollution. (Lec. 3)

**512 Development of Human Settlements (3)**

Structure, functions, and development of human settlements. Classical and contemporary urban theory. Emphasizes political economy of urbanization as a historical process tied to our other social processes. (Seminar)

**516 Seminar on the Urban Waterfront**

See Marine Affairs 516.

**522 Planning Law (3)**

General review and discussion of legal principles and thought concerned with property rights, political power, and the legal aspects pertinent to the planning and development of public and private activities. (Lec. 3) Pre: second-year graduate standing or permission of instructor.

**523 Planning Theory (3)**

Critical survey of planning theories and contemporary planning concepts. Values, assumptions, and processes of various planning paradigms as related to decisions in community planning. Specific emphasis on values and ethics in planning theory. (Seminar)

**525 Introduction to Planning Methods (4)**

Application of basic quantitative methods in planning: collection, analysis, and presentation of demographic, housing, and economic data. Introductory survey techniques. Introduction to computer applications in planning. (Lec. 3, Lab. 2) Pre: one course in statistics or permission of instructor.

**526 Techniques and Methodologies of Planning Research (4)**

Elementary social science research methods. Introduction to methodological approaches, research design, quantitative and qualitative data collection, and computerized data analysis in community planning and related urban social science. (Lec. 3, Lab. 2) Pre: 525.

**530 Urban Design and Public Policy (3)**

Significant concepts of historical and contemporary urban form ranging from entire cities to architectural details. Emphasis on urban design methods, process, and elements. Alternatives for implementation of urban design projects. (Lec. 3)

**536 International Comparisons in Urban and Regional Planning (3)**

Urban and regional development issues and policies in advanced and developing countries. Emphasis on population growth, urbanization, and spatial development. (Seminar) In alternate years.

**537 (or REN 532) Land Resources Economics (3)**

The study of economic relationships of man and scarce natural and man-made resources. Supply and demand, rent theory, resources conservation, and the impact of public policy and law. (Lec. 3)

**538 Site Planning (3)**

Site analysis and planning, including street design, principles of house grouping, and residential subdivision layout. Site planning standards for office development and shopping centers. (Lec. 3)

**539 Environmental Law (3)**

Analysis of specific environmental issues and policies including facility siting, land use and constitutional issues, comprehensive planning, public trust

doctrine, concurrence and state impact assessments. Independent research and presentation required. (Lec. 3)

**540 Community-Based Housing (3)**

Analysis of local housing needs; issues and perspectives in the context of federal and nonfederal program activities. Review of public-purpose strategies to provide housing that meets community needs. (Seminar) Pre: graduate standing or permission of instructor.

**542 Housing and Community Development Law (3)**

Examination of housing and community development laws through cases and readings. Focuses on the laws and programs that have been developed to address the problem of providing affordable housing in the United States. (Seminar) Pre: graduate standing or permission of instructor.

**543 Methods of Social Policy Analysis (3)**

Methods and techniques of social public policy analysis as applied to social problems and the evaluation of policy options, programs, and quality of life. (Seminar) Pre: 624 or permission of instructor. In alternate years.

**545 Land Development Seminar (3)**

A study of land management techniques including zoning, subdivision regulation, and land suitability and analysis; their use and environmental implications in land and water development. (Seminar) Pre: 511 or permission of instructor.

**546 (or CVE 546) Urban and Rural Transportation (3)**

Issues confronting planning for urban and rural transportation systems; the variety of policies that governments pursue in addressing issues and problems; technical and political constraints, transportation studies, and demand analysis techniques. (Lec. 3) Pre: 410 or 501 or permission of instructor. In alternate years.

**549 Seminar in Ecological Planning (3)**

Advanced seminar in ecological planning. Topics include hazardous waste, power plant siting, major transportation facilities, solid waste, aquifer protection, among others. Particular emphasis on wetlands and marine and coastal settings. (Seminar) Pre: 511 or permission of instructor.

**554 Community Development Funding and Subsidies (3)**

Analysis of strategies to access capital markets, protect the public good and induce public benefits. Financial planning and feasibility analysis for government-subsidized development projects. Not for graduate credit in the College of Business. In alternate years. (Seminar)

**555 Introduction to Economic Development Planning (3)**

Overview of economic development planning theory and practice. Emphasis on state and local planning in industrialized countries. The planning process and analytical techniques. Business, human resource, and community development strategies. (Seminar) Pre: 512 or permission of instructor. In alternate years.

**589 Master's Project Research (1-6)**

A substantial, self-directed planning project, by one or several students, under guidance of a major professor. Number of credits to be determined each semester. S/U credit.

**591, 592 Special Problems in Planning (1-6 each)**

Individual investigation of special problems in planning. (Independent Study)

**593-596 Special Problems in Planning (1-6 each)**

Group investigation of special problems in planning. (Independent Study)

**599 Master's Thesis Research (1-6)**

Number of credits is determined each semester in consultation with the major professor or program committee. S/U credit.

**624 Planning Policy and Management in Urban Areas (3)**

City planning as applied to urban policy in cities and metropolitan areas. Includes social, economic, and physical planning in the context of community development programs and management processes. (Seminar) Pre: 501, 511, 525, or permission of instructor.

**625 Central City Revitalization and Implementation (3)**

Advanced concentration course in central city planning. Focus on the problems of central cities and the causes of these problems. Emphasis on government policies to deal with the problems of the inner city. (Seminar) Pre: 624 or permission of instructor.

**631 Community Planning Studio (6)**

Team projects in planning and design; research and program development; field studies and problem analysis in local and state contexts. Development and evaluation of alternative solutions. (Studio 6) Pre: 525 and 526 or permission of instructor.

**691 Special Problems in Planning (1-6)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study)

**Community Service (CSV)**

*Coordinator:* Dean Richmond

*Note: The total number of credits in community service that may be earned toward graduation may not exceed 12.*

**101 Introduction to Cultural Competence (3)**

Basic principles for students identifying their beliefs and clarifying their values about people who appear different in ways that provoke negative attitudes and behaviors. (Lec. 2, Lab. 2) Required service learning.

**102 Cultural Competence Experiences (3)**

Continuation and elaboration to foster cultural competence for students. (Lec. 2, Lab. 3) Required service learning.

**301 Course-Based Community Service (1-3)**

Learning through a community service experience related to course content. Experience defined by a job description and learning contract; includes orientation and reflection. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. Concurrent enrollment in a course that offers community service experience. May be repeated for a maximum of 6 credits. S/U only.

**302 Community Service at URI (2-4)**

Learning through a community service project that addresses a specific community need at the University. Project proposed and supervised by an instructor, and varies each semester. Includes mandatory seminar. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits.

**303 Service in the Community (2-4)**

Learning through a community service project that addresses a specific need in the off-campus community. Project proposed and supervised by an instructor, and varies each semester. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits. S/U only.

**Comparative Literature Studies (CLS)**

*Coordinator:* Professor Manteiga

**160 Masterpieces of Literature**  
See English 160.**235 (or PHL 235) Modern Thought: Philosophy and Literature (3)**

Introduction to recent thought in philosophy and literature. Emphasis on Kierkegaard, Marx, Nietzsche, Freud, Sartre, and complementary literary texts. (Lec. 3) (L)

**250 Themes and Myths (3)**

Study of the evolution and transformation of a myth or theme in several national literatures. An introduction to a comparative and interdisciplinary approach. (Lec. 3) May be repeated for credit as often as topic changes. May be taken once for General Education credit. (A)

**335 (or ENG 335) Interdisciplinary Studies in Comparative Literature (3)**

Study of the interrelationships of two or more national literatures (In translation) with another discipline. (Lec. 3) May be repeated for credit as often as topic changes. (A)

**350 (or ENG 350) Literary Theory and Criticism (3)**

Introduction to theories of literature and their application in the analysis of selected texts. (Lec. 3) May be repeated for credit as often as topic changes.

**450 Studies in Comparative Literature (3)**

Detailed study of a literary movement, genre, or an aspect of literature as seen in two or more literatures. (Lec. 3) Pre: 6 credits in literature or permission of instructor. May be repeated for credit as often as topic changes.

**520 Literary Theory and Criticism (3)**

Metacriticism: literary criticism as theory and practice and the relationship between literary and critical discourse. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic.

**530 Approaches in Comparative Literature (3)**

Study of theme/myth, movement/era, genre/forms in two or more literatures, or interrelations with other disciplines. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic.

**597 Special Problems (1-6)**

Group and/or individual investigation of special problems in comparative literature studies. (Independent Study)

**599 Master's Thesis Research (1-6)**

Number of credits is determined each semester in consultation with the major professor and the Comparative Literature Studies Advisory Committee. (Independent Study)

*See other listings under English.*

**Computer Science (CSC)**

*Chairperson:* Professor Kowalski

**101 Computing Concepts (4)**

Capabilities and limitations of computers. Applications of computers in today's society. Overview of computing systems and programs. Students will complete several projects using a computer. (Lec.



3, Lab. 2) Not open to students who have credit in any college-level computer science course, or to computer science majors.

### 110 Survey of Computer Science (4)

How computers work. Design of a simple computer. Computer software, programming, and languages. Capabilities and limitations of computers. Artificial intelligence. (Lec. 3, Lab. 2) Open only to computer science majors with 4 or fewer credits in CSC courses.

### 200 Computer Problem Solving for Science and Engineering (4)

An integrated symbolic, numerical, and graphical approach to computer problem solving. Structured design; fundamental programming techniques. Computer algebra systems. Scientific, engineering, and mathematical applications. (Lec. 3, Lab. 2) Pre: credit or concurrent enrollment in MTH 131 or 141. Not for major credit in computer science. May not be taken for credit by students with credit in 201 or 211.

### 201 Introduction to Computer Programming (4)

Computer characteristics, algorithms, data representation, program development. Students will write several programs to solve numerical and nonnumerical problems. (Lec.3, Lab. 2) Pre: MTH 111 or equivalent. May not be taken for credit by students with credit in 200 or 211. (M)

### 211 Introductory Programming and Design (4)

Problem specification, solution design, and algorithm development. Object-oriented programming and program structure. Functions, selection, iteration, recursion, classes, arrays, and files. Required programs will solve numerical and nonnumerical problems. (Lec. 3, Lab. 2) Pre: prior experience with computers and programming and MTH 111 or equivalent. Intended for computer science and computer engineering majors.

### 212 Data Structures and Abstractions (4)

Abstract data types and data structures. Pointers, linked lists, stacks, queues, binary trees, and tables. Fundamentals of software engineering. Development of object-oriented programming techniques. (Lec. 3, Lab. 2) Pre: 211 and MTH 141. Intended for computer science and computer engineering majors.

### 301 Fundamentals of Programming Languages (4)

Organization of programming languages, data and control structures, syntax and semantics, compilers and interpreters. Block structured languages, recursion, parameter passing, run-time storage management. Procedural, functional, object-oriented, and logical languages. (Lec. 3, Lab. 2) Pre: 212.

### 305 Software Engineering (4)

Programming environments and methodologies for the design, development, testing, and maintenance

of large software systems. Student teams will develop a substantial software product from requirements to delivery using disciplined techniques. (Lec. 3, Project 3) Pre: 301.

### 320 Social Issues in Computing (4)

Discussion of the social and ethical issues created by the use of computers. The problems that computers solve and those that they produce. Ethics and responsibilities of the computer professional. (Lec. 4) Pre: 212, junior standing, or permission of instructor. In alternate years.

### 340 Mathematical Foundations of Computer Science (4)

Combinatorial techniques used in non-numerical computation and analysis of algorithms. Logic, proofs, enumerations, recurrence relations, graphs and networks, finite automata. Complexity analysis of several representative problems and algorithms for their solutions. (Lec. 4) Pre: 212 and credit or concurrent enrollment in MTH 215.

### 350 Fundamentals of Mathematical Computation (4)

Symbolic, numerical, and graphical approaches to mathematical computation. Pitfalls in numerical computation. Root finding. Numerical integration and differentiation. Approximation of functions. Interpolation and curve fitting. Linear systems. Ordinary differential equations. (Lec. 3, Lab. 2) Pre: 212 and MTH 215 and 243.

### 402 Compiler Design (4)

Grammars and languages; lexical analysis, parsing and translation, symbol tables, run-time storage administration, object code generation. Students will construct a compiler for a small programming language. (Lec. 3, Project 3) Pre: 301.

### 406 Computer Graphics (4)

Interactive raster graphics; hardware, software, and algorithms. Point plotting, line drawing, geometrical transformations, clipping and windowing. Three-dimensional graphics including curves, surfaces, perspective, hidden objects, shading. User interfaces; graphical programming environments. (Lec. 3, Project 3) Pre: 305, MTH 215 and 243.

### 411 Computer Organization (4)

Logical structure of computer systems viewed as a hierarchy of levels. Assembly language programming, assemblers, linkers, loaders. Computer architecture including digital logic, processor organization, instruction sets, addressing techniques, virtual memory, microprogramming. (Lec. 3, Project 3) Pre: 212, junior standing or permission of instructor.

### 412 Operating Systems and Networks (4)

General concepts underlying operating systems and computer networks. Topics include process management, concurrency, scheduling, memory

management, information management, protection and security, modeling and performance, networking and communication. (Lec. 3, Project 3) Pre: 212, junior standing or permission of instructor.

### 415 Introduction to Parallel Computing (4)

Programming techniques to engage a collection of autonomous processors to solve large-scale numerical and non-numerical problems. Processor interconnections. Parallel programming languages and models. Performance measures. (Lec. 3, Project 3) Pre: 301. In alternate years.

### 436 Database Management Systems (4)

Construction and management of large data systems. Data modeling, relational and object-oriented systems, main memory databases, query languages, query optimization, concurrency control, transaction management, distributed systems, disk organization, indexes, emerging technologies. (Lec. 3, Project 3) Pre: 301 or 412 or permission of instructor.

### 440 Algorithms and Data Structures (4)

Algorithm design and analysis, advanced data structures, computational complexity. Sorting, searching including hashing and balanced trees, string pattern matching, polynomial and matrix calculations, graph and network algorithms, NP-completeness and intractability. (Lec. 3, Project 3) Pre: 340.

### 445 Models of Computation (4)

Abstract models of computational systems. Classical models for uniprocessor, sequential, and stored program computers. New models based on recent advances in hardware, software, and communications and their implications in practice. (Lec. 3, Project 3) Pre: 340. In alternate years.

### 447 Discrete Mathematical Structures

See Mathematics 447.

### 481 Artificial Intelligence (4)

Theories, formalisms, techniques to emulate intelligent behavior using information processing models. Symbolic programming, search, problem solving, knowledge-based techniques, logic, theorem proving. Optional topics: natural language processing, machine learning, computer vision. (Lec. 3, Project 3) Pre: 301 or permission of instructor. In alternate years.

### 491 Directed Study in Computer Science (1-4)

Advanced work in computer science. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

### 492 Special Topics in Computer Science (1-4)

Advanced topics of current interest in computer science. (Lec.1-4, Project 1-3) Pre: permission of instructor.

**499 Project in Computer Science (4)**

Supervised work on a capstone project in computer science that prepares students for careers in industry and graduate study. (Practicum) Pre: advanced standing in computer science and departmental approval. Normally taken twice in two consecutive semesters. May be repeated for a maximum of 8 credits. Not for graduate credit. S/U credit.

**501 Programming Language Semantics (4)**

Design, analysis, implementation, and comparative study of major programming language families. Topics include procedural and block-structured languages, interpretive languages, concurrency, functional languages, object-oriented programming, logic programming, dataflow languages and machines. (Lec. 3, Project 3) Pre: 301.

**502 Theory of Compilers (4)**

An advanced course in compiler construction covering advanced parsing techniques, compiler-writing tools, type checking and type inference, code optimization, and compiling nonstandard language features. (Lec. 3, Project 3) Pre: 402. In alternate years.

**505 Advanced Topics in Software Engineering (4)**

Lifecycle models; software development environments; project management. Metrics, performance, and testing. Paradigms for software design and architecture. Legal and ethical issues. (Lec. 3, Project 3) Pre: 305. In alternate years.

**509 Object-Oriented System Design (4)**

Object-oriented design and programming, the software engineering process. Traditional and current object-oriented design methods. Software reuse. Design tools. Impact of the technology on traditional software engineering. (Lec. 3, Project 3) Pre: 305 and working knowledge of an object-oriented language. In alternate years.

**511 Advanced Computer Organization (4)**

Evaluation of high-performance computer systems with respect to architectures, operating systems, and algorithms. High-speed conventional machines; array processors; multiprocessors; data flow machines; RISC architectures; VLSI-based machines. (Lec. 3, Project 3) Pre: 411. In alternate years.

**512 Topics in Distributed Systems (4)**

Advanced topics in distributed systems. Networking; standard distributed computing environments. Distributed computing algorithms. Concurrency and threading. Real-time computing, scheduling, concurrency control, load allocation. (Lec. 3, Project 3) Pre: 412. In alternate years.

**517 Design and Analysis of VLSI Systems (4)**

Illustration and analysis of VLSI algorithms and architecture. Emphasis on design of very large-scale integrated circuits, related methodologies, and theoretical foundations. VLSI technologies, fabrica-

tion, automated design tools for various problems. (Lec. 3, Project 3) Pre: 411 and either 340 or 447. In alternate years.

**519 Computer Networks**

See Electrical Engineering 543.

**525 (or IME 525) Simulation (3)**

Discrete simulation models. Comparison of discrete change simulation languages. Methodology including generation of random variates, design of simulation experiments for optimization and validation of models and results. Selected applications. (Lec. 3) Pre: 212 and 6 credits of statistics.

**536 Topics in Data Management Systems (4)**

Current research and developments in database management systems. Relational, semantic, object-oriented, real-time, distributed, heterogeneous, and logic databases. Concurrency control, security, active rules, recovery, and integrity subsystems. (Lec. 3, Project 3) Pre: 436 or permission of instructor. In alternate years.

**541 Advanced Topics in Algorithms (4)**

Algorithm design techniques such as dynamic programming, greedy method, branch and bound. Linear programming; NP-completeness; graph algorithms; number theoretic algorithms; approximation algorithms for NP-complete problems; probabilistic and parallel algorithms. (Lec. 3, Project 3) Pre: 440 or 445. In alternate years.

**542 Mathematical Analysis of Algorithms (4)**

Mathematical techniques for the analysis of algorithms. Sums and products; finite difference calculus; properties of binomial coefficients; Stirling, harmonic, and Fibonacci numbers; recurrence relations; generating functions; asymptotic approximation. Case studies. (Lec. 3, Project 3) Pre: 440. In alternate years.

**544 Theory of Computation (4)**

Finite automata, pushdown automata, formal grammars and Chomsky hierarchy, Turing machines, computability, basics of complexity theory. Advanced topics including some of the following: cryptography, interactive proofs, circuit complexity, completeness for various complexity classes, relations among complexity classes, new models of computation. (Lec. 3, Project 3) Pre: 440 or 445. In alternate years.

**547 Combinatorics and Graph Theory**

See Mathematics 547.

**548 Topics in Combinatorics**

See Mathematics 548.

**550 Computer Algebra (4)**

Symbolic mathematical computation; history, use, representation of information, algorithms and heuristics. Big number arithmetic, manipulation of polynomials and rational expressions; algebraic simplification; factoring; symbolic integration.

Organization and implementation of computer algebra systems. (Lec. 3, Project 3) Pre: 350, 440. In alternate years.

**581 (or ELE 581) Special Topics in Artificial Intelligence (3)**

Topics of specialized or current interest, which may change. Topics may include expert systems, natural language processing, neural network models, machine learning. AI applications in remote sensing. (Lec. 3) Pre: 481 or permission of instructor. May be repeated with permission. In alternate years.

**583 Computer Vision**

See Electrical Engineering 583.

**591 Directed Study in Computer Science (1–4)**

Advanced work in computer science conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**592 Special Topics in Computer Science (1–4)**

Advanced topics of current interest in computer science. (Lec. 1–4, Project 1–3) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Dental Hygiene (DHY)**

*Director:* Assistant Professor Saunders

**100 Introduction to Dental Hygiene (2)**

An overview of the dental hygiene profession including basic dental anatomy, dental terminology, current infection control protocols, and preventive dentistry concepts. (Lec. 2)

**350 Dental Health Education (3)**

Educational philosophy, teaching methods, and acquisition of skills in methods of research. Investigation, review, interpretation, and critical evaluation of scientific literature as the basis for dental health education. (Lec. 3) For dental hygiene majors only.

**440 (or CMD 440 or PHT 440) Advanced Head and Neck Anatomy (3)**

Study of structure and function of human head and neck anatomy, supplemented by dissection laboratory. Emphasis on the musculoskeletal, visceral, nervous, and vascular systems related to dental hygiene and communicative disorders. (Lec. 2, Lab. 2) Pre: BIO 121 or equivalent.

**462 Oral Care of the Aged and Medically Compromised (3)**

Practical approach for the health-related professional. Emphasis on recognition of oral disorders, oral health care strategies, and principles of prevention for the aged and chronically ill. (Lec. / Practicum 3) Pre: permission of instructor.

**464 Field Experience in Community Oral Health (3)**

Directed field experience in dental health education in cooperation with community-based agencies. Weekly seminar. The experience will be defined by a job description and learning contract or letter of intent arranged by the instructor with the student and the agency supervisor. (Practicum) Pre: permission of instructor.

**Economics (ECN)**

*Chairperson:* Professor Ramstad

**100 Introduction to Economics (3)**

General overview of concepts economists employ to address issues of public policy. Description of major institutions of present-day American economy. Historical approach to subject matter. (Lec. 3) (S)

**201 Principles of Economics: Microeconomics (3)**

Principles underlying resource allocation, production, and income distribution in a market economy. Topics include demand and supply, consumer behavior, firm behavior, market structure, and elementary welfare analysis. Institutional foundations explored. (Lec. 3) (S)

**202 Principles of Economics: Macroeconomics (3)**

Principles underlying aggregate demand and aggregate supply in a market economy. Topics include national income determination, inflation, unemployment, economic growth, and international trade. Institutional foundations explored. (Lec. 3) Pre: 201 or equivalent. (S)

**305 Competing Traditions in Economics (3)**

Introductory exposure to the history of economic thought and also to competing schools of thought within modern economics. Connections between present-day controversies and competing traditions are explored. Pre: 201, 202. May be taken concurrently with 202.

**306 Introduction to Economic Research Methods (3)**

Development of supplementary skills needed to carry out economic research. Topics include: 1) widely used computer operating systems, 2) economic data sources, 3) elementary mathematical and statistical techniques, and 4) library research methods. Pre: 201, 202. May be taken concurrently with 202.

**310 Economics of Sports (3)**

Economic analysis of professional sports. Topics include sports and television, the collegiate foundation, franchise finance, athletes' compensation, and impact upon local public finance. (Lec. 3) Pre: 100, 201, an equivalent course, or permission of instructor.

**323 Intermediate Microeconomics (3)**

Theory of consumer behavior, the firm, market equilibrium, general equilibrium, imperfect competition, optimization over time, and linear models. Models of microeconomics are developed using calculus and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141.

**324 Intermediate Macroeconomics (3)**

Theory of consumption, investment, monetary and fiscal policy, static and dynamic models, economic growth, unemployment, and inflation. Macroeconomics developed using calculus and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141.

**327 Intermediate Economic Theory: Income and Employment (3)**

Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. (Lec. 3) Pre: 202 or 590 or permission of instructor.

**328 Intermediate Economic Theory: Pricing and Distribution (3)**

Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources, and the distribution of income. (Lec. 3) Pre: 201 or permission of instructor.

**334 Money and Banking (3)**

Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. (Lec. 3) Pre: 201 or permission of instructor.

**337 Industrial Organization and Public Policy (3)**

Historical and present attitudes and policies of various levels of government toward the changing structure of American business. Emphasis on legal and economic concepts of business activity. (Lec. 3) Pre: 201 or 202 or permission of instructor. Next offered 2003-04.

**338 International Economics (3)**

Theory and evidence on international trade and finance. Includes determinants and welfare effects of foreign trade, international investment, migration, exchange rates, and the balance of payments. (Lec. 3) Pre: 202 or permission of instructor.

**342 Public Finance (3)**

Examination of the theory and practice of public expenditures, revenues, and fiscal policy with major emphasis on federal fiscal affairs. (Lec. 3) Pre: 201 or 202 or permission of instructor.

**344 (or PSC 344) International Financial Economics (3)**

History, theory, and politics of the international financial system. Topics include the foreign exchange market, international banking, macroeconomic stabilization under fixed and floating exchange rates, exchange rate reform, and the global debt crisis. (Lec. 3)

**351, 352 Assigned Work (3 each)**

Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. (Independent Study) Pre: 201 or 202 or permission of instructor. S/U credit.

**363 Economic Growth and Development (3)**

Basic problems in economic growth and development of so-called backward or preindustrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. (Lec. 3) Pre: 201 or 202 or permission of instructor.

**368 Labor Economics (3)**

Impact of industrialization on workers; survey of the basic principles of labor market organization and operation; unemployment and remedies; wage determination under union and nonunion conditions. (Lec. 3) Pre: 201 and 202.

**375 Introduction to Quantitative Methods I (3)**

Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization, and differential equations. Application to economic problems. (Lec. 3) Pre: 201 and 202 and MTH 131 or 141, or permission of instructor. Next offered 2002-03.

**376 Introduction to Econometrics (4)**

Application of econometric methods to economic problems. Econometric tools applied to micro- and macroeconomic problems. (Lec. 3, Lab. 2) Pre: 201 or permission of instructor.

**381 Radical Critiques of Contemporary Political Economy (3)**

Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism, and racial and sexual discrimination. (Lec. 3) Pre: 202 or permission of instructor. (S)

**385 Economic Development of the United States (3)**

Developmental factors in American economic life introduce students to the past and present business environment. (Lec. 3) Pre: 201 or permission of chairperson.

**386 The Economics of Race, Gender, and Class (3)**

An economic examination of the historical interrelations of race, class, and gender issues in the United States. (Lec. 3) Pre: 100 or 201 or permission of instructor.

**402 Urban Economics (3)**

Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. (Lec. 3) Pre: 201 or 202 or permission of instructor.

**415 Environmental Harms and Sanctions (3)**

Political economic analysis of criminal, civil, and administrative regulation and law in an ecological context. Topics include hazardous waste, environmental justice, wilderness preservation, and global issues. Pre: junior or senior standing.

**444 Applied Research in Economics (3)**

The application of economic theory, econometrics, and computing to specific problems. Emphasis on formulation of hypotheses in mathematical form, transformation into forms suitable for empirical testing, testing using the computer, report writing, and oral presentation. (Lec. 3) Pre: 323, 324, and 376.

**445 Senior Research Project (3)**

Collaborative group research under guidance of department member. Topic jointly selected by members of group, subject to faculty approval. Written report required. (Independent Study) Pre: final semester for majors in the economics B.A. and B.S. Applied programs. Not for graduate credit.

**480 Seminar in Labor Studies**

See Labor Studies 480.

**515, 516 Economic Research (1–3 each)**

Independent research. (Independent Study) S/U credit.

**526 Economics of Labor Markets**

See Labor and Industrial Relations 526.

**527 Macroeconomic Theory**

See Resource Economics 527.

**528 Microeconomic Theory**

See Resource Economics 528.

**534 Information Sources and Uses in Labor Relations and Labor Economics**

See Labor and Industrial Relations 534.

**576 Econometrics**

See Resource Economics 576.

**590 Principles of Economics (3)**

Survey of micro- and macroeconomic theory. (Lec. 3) Pre: graduate standing in accounting, labor and industrial relations, or M.B.A. program.

**628 Advanced Microeconomic Theory I**

See Resource Economics 628.

**676 Advanced Econometrics**

See Resource Economics 676.

**Education (EDC)**

Director: Professor Felner

**102 Introduction to American Education (3)**

Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a sociocultural phe-

nomenon and an embodiment of philosophical commitments. (Lec. 2, Rec. 1) Not for major credit in elementary or secondary education. (S)

**250 Supervised Preprofessional Field Experience (1)**

Supervised early field experience and seminar for students wishing to explore one or more possible career choices in education. (Practicum) May be repeated for credit. S/U only.

**279 Career Development Seminar (1)**

Individualized approach to career concerns, skill identification, self-awareness, career development theory, decision making. Emphasis on understanding long- and short-term goals. (Seminar)

**302 Topics in Educational Studies (3)**

Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary. (Lec. 3) Pre: sophomore standing or permission of instructor.

**312 The Psychology of Learning (3)**

An analysis of learning with emphasis on principles and procedures applicable to any human teaching and learning situation. (Lec. 3) Pre: PSY 113. (S)

**329 Music for the Elementary School Teacher**

See Music 329.

**350 Primary School Practicum (1)**

Students apply methodology in a public school setting for grades K–2 for three hours each week for 10 weeks. Lessons are taught and principles of classroom management, individualized instruction, and integrated curriculum are applied. (Practicum) Pre: HDF 200 and acceptance into the early childhood education program. S/U only.

**360 Foundations of American Education (3)**

An analysis of historical, social, and philosophical foundations of American education, emphasizing theory and practice in contemporary schools and the relevance and appropriateness of the educational values schools reflect. (Lec. 3) Pre: open to students admitted to concentrations in elementary or secondary education. Students must be accepted into the education program.

**371 Educational Measurements (3)**

An analysis of concepts and procedures involved in creating, selecting, summarizing, and using tests and other measurement devices in educational settings. (Lec. 3) Pre: 312.

**400 Middle School Curriculum (3)**

Examination of contemporary middle school curriculum including trends, issues, and models. Attention focused on middle school children, middle school teachers, integrated and interdisciplinary instruction, standards-based curriculum and assessment. Undergraduates seeking Middle Level

Endorsement are required to take this course, preferably the semester prior to student teaching. (Lec) Pre: 424 or 448 or permission of instructor.

**401 Development and Utilization of Instructional Materials (3)**

Methods of developing and making classroom application of selected materials: nonprojected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, arithmetic, and mathematics. (Lec. 1, Lab. 4) Pre: senior standing and 6 hours of education.

**402 The Education of Special Needs Students (3)**

Legislative, judicial, social, and psychological issues related to the assessment, identification, and remediation of special needs students' problems in the regular and special education classroom. (Lec. 3) Pre: PSY 232 or HDF 200 and EDC 312.

**415 Adolescents and Classroom Management (3)**

Issues pertaining to adolescent development as manifested in the classroom. Emphasis upon classroom management strategies for the learning and developmental needs of adolescents. (Lec. 3) Pre: in- or pre-service major in secondary education or permission of instructor.

**424 Teaching Literacy in the Elementary School (3)**

Fundamental knowledge base in literacy development and instruction. Bridges theory and practice through exposure to a variety of methods and materials used to create a comprehensive literacy curriculum. (Lec) Pre: Prior or concurrent enrollment in 312, 512, graduate standing or permission of instructor. service learning optional.

**425 Using Trade Books in the Reading and Writing Program (3)**

Instructional strategies for using trade books to develop skilled reading and comprehension, foster literary appreciation, connect literature to personal experience, and promote integration throughout the curriculum. (Lec. 3) Pre: 424, graduate standing or permission of instructor or concurrent enrollment in 424.

**426 Integrated Primary School Curriculum (4)**

Principles and practices of developing knowledge, skills and activities in Language Arts/Reading, Math, Science, Social Studies, Music, Art and Physical Education/Health. (Lec) Pre: Portfolio interview/Acceptance into ECE Teaching Program. Concurrent enrollment in 350.. Not for graduate credit in education.

**427 Methods and Materials in Elementary Teaching I (3)**

Language arts and reading principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 3) Pre: PSY 113 and 232, EDC 312,

concurrent enrollment in EDC 428, and permission of director. Open only to elementary education majors. Not for graduate credit in education.

#### **428 Methods and Materials in Elementary Teaching II (3)**

Principles and practices of developing skills and knowledge in social studies, math, and science with elementary school children. (Lec. 3) Pre: PSY 113 and 232, EDC 312, concurrent enrollment in EDC 427, and permission of director. Open only to elementary education majors. Not for graduate credit in education.

#### **429 Emergent Literacy and Storytelling (2)**

Theoretical foundations and practical applications of emergent reading, writing and language development including field-based storytelling experiences at Early Childhood Sites. Focuses on children birth-six years. (Lec. 2) Pre: Portfolio interview/ acceptance into ECE Teaching program, (except summer). Prior or concurrent enrollment in 424 (except summer). Spring enrollment limited to students admitted to ECE teaching program and scheduled to student teach the following fall. Not for graduate credit. Optional service learning.

#### **430 Methods and Materials in Secondary Teaching (3)**

Principles of education and human sciences as related to curricular materials and classroom situations. Sectioned by academic major: business, English, mathematics, modern language, science, social studies. (Lec. 3) Pre: 102, 312, PSY 232, senior standing, and permission of instructor. Concurrent enrollment in 250 required. Open only to secondary education majors. Spring semester only for students in the College of Business Administration. Not for graduate credit in education.

#### **431 Clinical Experiences for Secondary Education (1)**

Secondary school clinical experience, taken concurrently with secondary methods course (430) during semester prior to student teaching. Student applies content learned in methods course and prior course work to peer teaching and classroom settings. Restricted to majors. (Practicum) Not for graduate credit. S/U only.

#### **435 The Teaching of Composition**

See Writing 435.

#### **448 Literacy Practices for Content Subjects (3)**

Emphasis on the development of specialized vocabulary, textbook reading techniques, and other study skills needed to read math, science, social studies, business, and other content area materials. (Lec. 3) Pre: 312, 512 or graduate standing.

#### **449 Teaching Adolescent Literature (3)**

The current canon of adolescent literature will be reviewed and expanded, and methodologies for literature instruction will be explored. (Lec. 3) Pre:

acceptance into the English education program or permission of instructor. Not open to students who have taken LSC 531.

#### **452 Evaluation of Elementary Students (2)**

Purposes and means of evaluating elementary school children will be critically analyzed. Types of tests and measurement tools will be examined, such as observation checklists, sociograms, rating scales, and portfolios. (Seminar) Pre: 453, 454, acceptance into the elementary education program or permission of director. Not for graduate credit.

#### **453 Individual Differences (3)**

Analyzing the needs of various student populations with attention given to the concomitant values, resources, and curriculum modifications necessary for success in learning. (Lec. 3) Pre: acceptance in the elementary education program or permission of director. Not for graduate credit.

#### **454 Individual Differences Field Component (1)**

Supervised field experience related to 453 consisting of special education, language minority, compensatory education, gifted and talented, and at-risk students. (Practicum) Pre: acceptance into the elementary education program or permission of director. Not for graduate credit.

#### **455 Language Arts Methods in Elementary Teaching (2)**

Language arts and reading principles and practices of guiding children in the skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 2) Pre: 452, 456 and 457; acceptance into the elementary education program or permission of director. Concurrent enrollment in 458 and 459. Not for graduate credit.

#### **456 Mathematics Methods in Elementary Teaching (2)**

Principles and practices of developing knowledge and skills in mathematics with elementary school children. Service learning. (Lec. 2) Pre: 453, 454; acceptance into the elementary education program or permission of director. Concurrent enrollment in 452 and 457. Not for graduate credit.

#### **457 Science Methods in Elementary Teaching (2)**

Principles and practices of developing knowledge and skills in science with elementary school children. (Lec. 2) Pre: 453, 454; acceptance into the elementary education program or permission of director. Concurrent enrollment in 452 and 456. Not for graduate credit.

#### **458 Social Studies Methods in Elementary Teaching (2)**

Principles and practices of developing knowledge and skills in social studies with elementary school children. (Lec. 2) Pre: 452, 456 and 457; acceptance into the elementary education program or permission of director. Concurrent enrollment in 452 and 459. Not for graduate credit.

#### **459 Supervised Elementary Methods Practicum I (1)**

Supervised field experience related to evaluation of elementary students and methods courses: assessment, mathematics, and science. Students will observe and teach. (Practicum) Pre: admission into the elementary education program; 102, 250, 312, and 424. Concurrent enrollment in 425, 452, 456, and 457. Not for graduate credit.

#### **460 Supervised Elementary Methods Practicum II (2)**

Supervised field experience related to evaluation of elementary students and methods courses: teaching special needs students, social studies and language arts. Students will observe and teach. Students meet periodically throughout the semester to focus on issues of classroom management. (Practicum) Pre: admission into the elementary education program; 102, 250, 312, and 424. Concurrent enrollment in 402, 455, and 458. Not for graduate credit.

#### **470 Advanced Methods in Elementary Mathematics (3)**

Advanced study of elementary mathematics topics and methods. Math activities that promote understanding in the elementary student in areas such as geometry, number theory, and probability/statistics. Emphasizes utilization of NCTM Mathematics Standards. (Lec. 3) Pre: 484 or permission of instructor.

#### **478, 479 Problems in Education (0-3 each)**

Advanced work in education conducted as seminars, supervised individual projects, or supervised field experiences. (Independent Study) Students in seminars and supervised individual projects will be graded using standard grades (A-F); students in supervised field experiences will be graded using S/U grades only.

#### **484 Supervised Student Teaching**

Under selected and approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include: secondary nonvocational, S/U credit; elementary education, S/U credit; home economics, S/U credit; resource development; business; music; theatre. (Practicum) Pre: methods course(s) of department involved. Not for graduate credit in education.

#### **485 Seminar in Teaching (3)**

Seminar associated with student teaching. Classroom issues, resource materials, and teaching models are addressed. Course work from throughout the undergraduate program and student teaching is integrated into a professional portfolio. Capstone. Areas include: secondary nonvocational, elementary early childhood education, home economics, resource development, business, music,

physical education (S/U only), theatre. (Seminar) Pre: concurrent enrollment in 484 and permission of director. Not for graduate credit in education.

**486 Student Teaching in Elementary Physical Education (6)**

Under selected and approved critic teachers, students participate in classroom teaching and other school activities. (Practicum) Pre: methods courses of department. Not for graduate credit in education.

**487 Student Teaching in Secondary Physical Education (6)**

See 486.

**488 Student Teaching in Special Physical Education (6)**

See 486.

**489 Student Teaching in Health Education (6)**

See 486.

**500 Foundations of Adult Education (3)**

Examination of fundamental structure, functions, problems, and history of adult education in America. Focus on socioeconomic factors and philosophical commitments that have shaped various programs. (Lec. 3) Pre: graduate or senior standing and permission of instructor.

**502 Foundations of Curriculum (3)**

History and analysis of foundational ideas and schools of thought about curriculum and how they shape modern practices in curriculum development, implementation, evaluation, and change in the United States. (Lec. 3)

**503 Education in Contemporary Society (3)**

Leading educators' responses to issues and challenges confronting American education. Emphasis on identification and analysis of contemporary theories and practices reflecting the relationship between characteristics of society and educational values. (Lec. 3)

**504 Adult Basic Education (3)**

Teaching of adults whose educational level is below high school completion. Physical, social, and psychological characteristics of disadvantaged adults and various techniques and materials useful in motivating and teaching them. (Lec. 3) Pre: permission of instructor.

**505 Leadership Development in Adult Programs (3)**

Discussion of leadership concepts, styles, and implications. Discussion and practice in the use of several adult education methods and techniques for increasing the effectiveness of groups and organizations. (Lec. 3) Pre: Permission of instructor.

**506 Foundations of Education: Teaching and Learning (7)**

Philosophical, cultural, and psychological foundations of American education. Focus on ideological beliefs, cultural factors, and psychological principles and practices that shape teaching and learning. Field work integrated with classroom assignments. Pre: permission of director.

**508 Interdisciplinary Curriculum Development (3)**

Curriculum development of interdisciplinary units for schools. Focus is on grade-level units, which incorporate multiple subject areas. Both individual and group projects required. (Lec. 3) Pre: Permission of instructor.

**512 Educational Psychology/Classroom Learning (3)**

Survey and analysis of classroom learning literature. Particular attention paid to interaction of theory and research for instructional practice. Introduces relevant measurement, statistical, and research concepts. (Seminar) Pre: previous course in psychology, or permission of instructor.

**514 Current Trends in Elementary Education (3)**

For teachers and administrators, the most effective use of instructional materials, media of communication, and personnel in elementary school. (Lec. 3) Pre: 529 or permission of director. In alternate years. Next offered 2003–04.

**515 Job Embedded Professional Development (3)**

Job embedded professional development focuses on assisting educators in the reflection and data analyses required to design and implement professional development activities within schools. The central purpose of these professional development activities is to improve teaching and student learning. The literature on job embedded professional development will be analyzed and participants will design proposals for job embedded professional development in their schools/districts.

**516 Teaching English as a Second Language to Adults (3)**

Methods and materials for educators who teach English as a second language to adults. (Lec. 3) Pre: permission of instructor.

**517 Teaching Social Studies in the Elementary School (3)**

Intensive research in various cross-subject topics within the social studies. Systematic analyses of learning theories and methods as they relate to the teaching of social studies in the elementary grades. (Lec. 3) Pre: graduate or postgraduate standing.

**518 Teaching Science in the Elementary School (3)**

Emphasis on methods and materials for use in the teaching of science in technology, life, earth, space and physical science topics. (Lec. 3) Pre: permission of instructor.

**520 Teaching of Mathematics (3)**

For the experienced teacher, examination of the principles underlying the teaching of mathematics in the elementary school; comprehensive survey of materials and methods available for the classroom teacher of mathematics. (Lec. 3) Pre: senior or graduate standing. In alternate years. Next offered 2002–03.

**521 Teaching Basic Reading to Adults (3)**

Techniques for teaching basic reading skills to illiterate adults; diagnosis, methods, and materials. (Lec. 3) Pre: 504 or permission of instructor.

**522 Microcomputer Applications in the Classroom (3)**

Introduction to the use of microcomputers in elementary and secondary classrooms. History, current use, techniques for evaluating hardware and software, implementation issues, future developments. (Lec. 3) Pre: senior or graduate standing.

**528 Teaching Language Arts (3)**

Preparation, presentation, use and evaluation of methods and materials for teaching reading, writing, speaking and listening in the language arts classroom and throughout the curriculum for K-6 grades. Pre: graduate standing.

**529 Foundations of Educational Research (3)**

Analysis of the current major research approaches to educational problems with emphasis on interpreting published research involving the language of statistics. Functional skills in basic descriptive statistics needed prior to enrolling. (Lec. 3)

**530 Qualitative Research and Evaluation (3)**

Qualitative methods, including ethnography, for obtaining and using data in describing, interpreting, and reaching warranted judgments, particularly about educational and social problems. Emphasis on developing individual projects and writing formal reports. (Lec. 3)

**539 Evaluation and Monitoring of Occupational Training Programs (3)**

Evaluation and monitoring theory and practice for occupational training programs. Focus on development of systems for job training such as CETA, Vocational Education, and private sector programs. (Lec. 3) Pre: 529 or permission of instructor.

**540 Learning Disabilities: Assessment and Intervention**

See Psychology 540.

**544 Reading Acquisition and Reading Disability: Research and Implications for Practice**

See Psychology 544.

**555 Quantitative Thinking and Applications for Education (3)**

Basic logic and techniques of quantitative data analysis. For Education Ph.D. students planning to

conduct applied research in educational settings, this course provides foundations of receptive and expressive literacy. This course satisfies the prerequisite for EDP 625, but cannot be used for program credit. (Lec. 3) Pre: admission to joint URI-RIC Ph.D. in Education program. (Spans both summer sessions.)

### **563 Teaching Reading to Multicultural Populations (3)**

Identification of the strengths of learners whose cultural and socioeconomic backgrounds vary, and the implications for teaching reading. Special emphasis on the selection and development of appropriate materials and teaching strategies. (Lec. 3) Pre: 424 or permission of instructor.

### **564 Diagnosis of Literacy Difficulties (4)**

Use informal and formal techniques to assess students' reading and writing skills, evaluate contextual factors, evaluate the match between learner and context. Culminates in case report and plan for instruction. (Lec/Lab 4) Pre: admission to reading master's program or permission of reading program

### **565 Advanced Literacy Research Seminar (3)**

In-depth review of literacy research and theory from a variety of perspectives. Analysis of the relationship between research, theory, and political/instructional decisions. Includes development of a proposal to conduct literacy research. (Lec. 3) Pre: acceptance into reading master's program or permission of reading program

### **566 Intervention in Reading and Writing Difficulties (4)**

Supervised clinical experience in reading and writing difficulties. Students work directly with struggling readers and writers to diagnose reading/writing difficulties and plan and implement an appropriate program of instruction. (Lec/Lab 4) Pre: 564 and 565

### **567 Field Study in Literacy (4)**

Supervised clinical experience in reading and writing difficulties. Students work directly with struggling readers and writers to diagnose reading/writing difficulties and plan and implement an appropriate program of instruction. (Lec/Lab 4) Pre: 565

### **568 Teaching Diverse Learners in Standards Based Classrooms (3)**

Theory and strategies for differentiating instruction for learners to meet the needs of a diverse population in a regular heterogeneously grouped standards based classroom. Development and refinement of integrated units using differentiated instructional strategies and adapting standards based instruction for diverse learners is emphasized as well as evaluating results. (Lec. 3) Pre: 400 or 424 or 448 or permission of instructor.

### **569 Best Practices in the Middle Level Classroom (3)**

Examination of research, data, and practices for middle level curriculum, instruction, and assessment practices. Emphasizes student-teacher relationship, classroom management, standards-based instruction and accountability for school improvement and integrated instruction. (Lec. 3) Pre: 400 or permission of instructor.

### **570 Elementary School Curriculum (3)**

Modern curriculum in the elementary school with emphasis on the needs of children. Covers language arts, social studies, science, arithmetic, and special subjects. (Lec. 3) Pre: 529 or equivalent. In alternate years. Next offered 2003–04.

### **574 Current Trends in Secondary Education (3)**

Effective use of instructional materials, media of communication, and organization of personnel and current research. (Lec. 3) Pre: 529 or permission of director.

### **575 Supervised Field Study/Practicum and Seminar in Education (3)**

For nonthesis candidates. Lectures, seminars, and field work. Candidates plan and conduct a field study/practicum project approved by the instructor and the student's professor. A formal proposal is developed, submitted, and approved, the project completed, and a formal paper defended. (Practicum) Pre: admission to a master's program in education and permission of instructor. May be repeated for a maximum of 6 credits.

### **579 Labor Relations and Collective Bargaining in Education**

See Labor and Industrial Relations 579.

### **581 Administering Adult Programs (3)**

Administration, personnel management, resource management, recruitment, development, and supervision within programs dealing with adults as learners. (Lec. 3) Pre: 505 or permission of instructor.

### **582 Instructional Systems Development for Adult Programs (3)**

Designing and implementing instructional systems. Discussion of the basic tenets underlying theories of instructional technology, curriculum development, and curriculum change as they apply to adult learners in a variety of settings. (Lec. 3) Pre: 581 or permission of instructor.

### **583 Planning, Design, and Development of Adult Learning Systems (3)**

Overview of the program planning process including goal setting, needs analysis, program planning, and implementing change strategies. Discussion of effective functioning in the role of change agent within an organization. (Lec. 3) Pre: permission of instructor.

### **584 The Adult and the Learning Process (3)**

Examination of the adult as a learner with emphasis on the factors that affect adult learning and learning processes related to instruction. (Lec. 3) Pre: 581 or permission of instructor.

### **586, 587 Problems in Education (0–3 each)**

Advanced work for graduate students in education. Courses conducted as seminars or as supervised individual projects. (Independent Study) Pre: permission of director. May be repeated for credit with different topic.

### **594 Organization and Supervision of Literacy Programs (3)**

Field experience in the roles/responsibilities of a reading specialist. Requires shadowing reading professionals, visiting schools, involvement in professional groups, developing action plans, and developing and presenting professional development sessions. (Lec/Lab 3) Pre: 565 or permission of reading program. In alternate years. Next offered 2003–04.

### **596 Organization Development in Education**

See Human Development and Family Studies 562.

### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### **683 Psychology of the Exceptional Child**

See Psychology 683.

### **687 Seminar: Topics in the Psychology of the Exceptional Individual**

See Psychology 687.

### **920 Workshop for Teachers (1–3)**

Current issues in education. Specific topics offered for inservice teachers and administrators. May be repeated with different topic. (Workshop) Pre: teacher certification.

### **921, 922, 923 Workshop for Teachers (1–3 each)**

Current issues in education. Specific topics offered for inservice teachers and administrators. (Workshop) Pre: certified teacher.

## **Ph.D. in Education (EDP)**

Co-Director: Professor Heifetz

### **610 Core Seminar I: Issues and Problems in Educational Inquiry and Foundations (3)**

Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom settings is emphasized. (Seminar) Pre: admission to the Ph.D. program in education.

**611 Core Seminar I: Issues and Problems in Educational Inquiry and Foundations (3)**

Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom setting is emphasized. (Seminar) Pre: 610.

**615 Research Methodologies (3)**

Four educational research methodologies (historical, qualitative, quantitative, and philosophical) are reviewed. Each methodology is examined for its contribution to knowledge and understanding of teaching and learning in an educational setting. (Lec. 3) Pre: concurrent enrollment in 611 or permission of instructor.

**620, 621 Core Seminar II: Issues and Problems in Human Development, Learning, and Teaching (3 each)**

Issues and problems related to human development, curriculum, teaching, and learning are examined. Ways of gathering and evaluating evidence about school and curriculum effectiveness are emphasized. (Seminar) Pre 620: 610, 611, 615. Pre 621: 620.

**625 Quantitative Analysis in Educational Research (3)**

Educational research data is quantitatively analyzed. Data collected during Core Seminar I are analyzed and interpreted. Applications of the General Linear Model to a variety of research designs and analytic strategies are emphasized. (Lec. 3) Pre: 610, 611, 615 and a course in introductory statistics, or permission of instructor.

**630, 631 Core Seminar III: Issues and Problems in Organizational Theory, Leadership, and Policy Analysis (3 each)**

Issues and problems related to applications of organizational theory, leadership theory, and policy analysis are studied. Core seminar examines cases related to district, state, and/or regional educational offices and agencies. (Seminar) Pre 630: 620, 621.

**641 Field Research Seminar (1)**

Bi-weekly forums present first-, second-, and third-year students' evolving research questions and empirical designs. Discussion and feedback refine individuals' research plan, enhancing the methodological perspectives and tools of all participants. (Seminar) Pre: admission to joint (URI-RIC) Ph.D. in Education. May be repeated up to a maximum of six semesters (a total of six credits).

**692, 693 Directed Readings and Research Problems (3-6 each)**

Directed readings and advanced research work under the supervision of a member of the Graduate Faculty, arranged to suit the individual requirements of the students. (Independent Study) May be repeated for a maxi-

mum of 12 credits. Pre: 610-611, 615, two credits of 641, and permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only.

**Electrical Engineering (ELE)**

*Chairperson:* Professor Vaccaro

**201 Digital Circuit Design (3)**

Logic gates, Boolean algebra, combinatorial and sequential circuits, analysis and design of sequential systems, multi-input system controllers, asynchronous finite state machines. (Lec. 3) Pre: sophomore standing.

**202 Digital Circuit Design Laboratory (1)**

Laboratory experience in digital electronics; logic design projects using standard integrated circuits. (Lab. 3) Pre: credit or concurrent enrollment in 201.

**205 Microprocessor Laboratory (3)**

Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. (Lec. 2, Lab. 3) Pre: credit or concurrent enrollment in MTH 141.

**212 Linear Circuit Theory (3)**

Kirchoff's Laws, DC-resistive networks, dependent sources, natural and forced response of first- and second-order circuits, sinusoidal steady-state response, phasors, AC power. (Lec. 3) Pre: PHY 204 and credit or concurrent enrollment in MTH 362.

**215 Linear Circuits Laboratory (2)**

DC measurements, natural and step response of first- and second-order circuits, AC measurements, impulse and frequency response, operational amplifier circuits. (Lec. 1, Lab. 3) Pre: credit or concurrent enrollment in 212.

**220 Passive and Active Circuits (3)**

Electrical circuit laws and theorems, transient and steady-state response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. (Lec. 3) Pre: PHY 204 or 214. Not open to electrical engineering majors.

**221 Electronic Instruments and Electromechanical Devices (3)**

Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applications, electrical measurements. Magnetic circuits, transformers, electromechanical transducers, and systems, DC and AC machines. (Lec. 3) Pre: 220. Not open to electrical engineering majors.

**282 Biomedical Engineering Seminar I (1)**

Seminar series given by instructor, invited experts, and students with focus on biomedical electronics,

medical devices, rehabilitation engineering, and microprocessor-based medical instrumentation. (Seminar) Pre: sophomore standing in biomedical engineering or permission of instructor.

*Admission to all 300-level courses in electrical engineering is limited to students formally transferred to the College of Engineering. Prerequisites for all 300-level ELE courses include mathematics through MTH 243, or PHY 214, ELE 212 and 215. Additional prerequisites are indicated with each course. Exceptions are possible, with permission of the chairperson, for advanced students in other disciplines.*

**305 Introduction to Computer Architecture (3)**

Architecture of digital computers. CPU microarchitecture. Instruction execution cycle. Instruction sets. The memory hierarchy. Pipelining, instruction level parallelism, parallel computing. Networks. (Lec. 3) Pre: 201, 202, 205; and one of CSC 200, 201 or 211.

**306 Computer Engineering Laboratory (2)**

Computer hardware design, simulation and synthesis using electronic design automation (EDA) tools. Introduction to IEEE VHDL (VHSIC Hardware Description Language). (Lec. 1, Lab. 3) Pre: 201, 101, 205 credit or concurrent enrollment in 305 and one of CSC 200, 201, or 211.

**313 Linear Systems (3)**

Fourier series, Fourier transforms, transfer functions of continuous and discrete-time systems, transient and steady-state response, natural response and stability, convolution. (Lec. 3) Pre: 212.

**314 Linear Systems and Signals (3)**

Continuous-time and discrete-time systems, frequency response, stability criteria, Laplace transforms, z-transforms, filters, sampling, feedback, and applications. (Lec. 3) Pre: 313.

**322 Electromagnetic Fields I (3)**

Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra and vector calculus in orthogonal coordinates. Simple applications to engineering problems. (Lec. 3) Pre: MTH 243 and either PHY 204 or 214.

**325 Electrical Power Distribution Systems (3)**

Theory of 3-phase power systems, introduction to per unit system of analysis, distribution system components (transformers, lines, switch-gear, loads), system layout, analysis of unbalanced systems with symmetrical components. (Lec. 3) Pre: 212, PHY 204.

**331 Introduction to Solid State Devices (3)**

Electrical and optical properties of semiconductors. Characteristics of p-n and metal-semiconductor junctions. Application to diodes, transistors and light emitting and absorbing devices. Fabrication technology is introduced. (Lec. 3) Pre: PHY 306 or 341 or equivalent.



**342 Electronics I (4)**

Review of linear circuit theory, operational amplifiers, diode and transistor circuits, computer-aided design, linear and nonlinear circuit applications, CMOS logic (Lec. 3, Lab. 3) Pre: 212 and 215.

**343 Electronics II (5)**

Bipolar and MOS transistor biasing, small signal amplifiers, amplifier frequency response, operational amplifiers, SPICE, nonlinear circuits, statistical circuit simulation. (Lec. 3, Lab. 5) Pre: 342.

**382 Biomedical Engineering Seminar II (1)**

Seminar series given by instructor, invited experts, and students with focus on physiological system modeling, biomechanics, biomaterials, tissue engineering, artificial organs, and biosensors. (Seminar) Pre: junior standing in biomedical engineering or permission of instructor.

**391 Honors Work (1-3)**

Independent study and seminar-type work under close faculty supervision. Discussion of advanced topics in electrical engineering in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson.

*Prerequisites for all 400-, 500-, and 600-level electrical engineering courses include mathematics through calculus (MTH 243), at least 6 credits in circuit theory, and 3 credits in electromagnetic fields. Additional prerequisites are indicated with each course. Some circuits and fields prerequisites may be waived for 482, 545, 588, and 589 for students with suitable backgrounds.*

**400 Introduction to Professional Practice (1)**

Engineering Ethics. Discussions with faculty, visiting engineers, and invited speakers on ethical, social, economic, and safety considerations in engineering practice; career planning; graduate study. (Lec. 1) Pre: junior or senior standing in electrical, computer, or biomedical engineering. Not for graduate credit.

**401 Lasers, Optical Systems, and Communications (4)**

Concepts of modern optics, coherence, diffraction, and Fourier optics, optical resonators, Gaussian beam optics, laser fundamentals, and light amplification. Course includes a design project concerning an optical system or instrument. (Lec. 3, Lab. 3) Pre: 322.

**405 Digital Computer Design (4)**

Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. (Lec. 3, Lab. 3) Pre: 306.

**408 Computer Organization Laboratory (4)**

Engineering design problems involving modern microprocessor systems, operation of ALUs, data

paths, control units, input and output, memory, and networks. Computer engineering majors integrate their computers and compilers; others perform another significant project. (Lec. 2, Lab. 5) Pre: 305.

**423 Electromagnetic Fields II (4)**

Transmission lines, Maxwell's equations, wave equation, reflection and refraction phenomena, waveguides and antennas. Design projects requiring application of electromagnetic theory and use of numerical methods. (Lec. 4) Pre: MTH 362 and ELE 322. Not for graduate credit.

**427 Electromechanical Systems Laboratory (4)**

State-variable models. Electromechanical devices and systems in translation and rotation. Design of sensors, actuators, and systems as used in control applications. (Lec. 3, Lab. 3) Pre: 313 and 322.

**432 Electrical Engineering Materials (4)**

Continuation of 331. Electronic and optical properties of materials, mainly semiconductors, applied to the performance and design of electronic devices. Measurements and analysis of these properties will be performed in the laboratory. (Lec. 4) Pre: 331 or equivalent.

**436 Communication Systems (4)**

Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. Design of a component of a communication system. (Lec. 3, Lab. 3) Pre: 313 and 314.

**437 Computer Communications (3)**

Computer networks, layering standards, communication fundamentals, error detection and recovery, queuing theory, delay versus throughput trade-offs in networks, multiple-access channels, design issues in wide and local area networks. (Lec. 3) Pre: 436 or MTH 451 or IME 411.

**444 Advanced Electronic Design (4)**

Design of advanced digital circuits, distributed circuits, circuit and logic simulation, interfacing, designs based on MSI and LSI components, EPROMs, and PALS. (Lec. 3, Lab. 3) Pre: 342.

**447 VLSI Design and Simulation (4)**

Design and fabrication of custom integrated circuits. Techniques to synthesize and analyze logic systems. Hierarchical building blocks of basic cells. Layout, circuit extraction/simulation and design verification methods. (Lec. 3, Lab. 3) Pre: 342.

**457 Feedback Control Systems (3)**

Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, Bode diagrams, Nyquist criterion, root locus techniques, state variables, and compensation methods. (Lec. 3) Pre: 313.

**458 Digital Controls Laboratory (4)**

Design of digital control systems using state-space techniques. State feedback and observers. Laboratory includes computer simulation and hardware implementation of control laws for electromechanical systems. (Lec. 3, Lab. 3) Pre: 457 or permission of instructor.

**482 Biomedical Engineering Seminar III (1)**

Seminar series given by instructor, invited experts, and students with focus on biomedical signals and systems, computers in medicine, technologies for health care, and biomedical ethics. (Seminar) Pre: junior standing in biomedical engineering or permission of instructor.

**488 Biomedical Engineering I (4)**

Medical imaging: X-rays, tomographic reconstruction techniques, angiography, radio-nuclide imaging, diagnostic ultrasound, magnetic resonance imaging, picture archiving and communication system. Modeling of physiological systems: nerve system, cardiopulmonary circulation. Design project. Pre: senior standing in biomedical engineering or permission of instructor. Not for graduate credit. May not be taken by students who have credit in 588.

**489 Biomedical Engineering II (4)**

Medical instrumentation: patient safety, isolation and noise-rejection techniques, pacemaker, cardiac-assist devices. Physiological measurements: pressure, flow, biosensors. Biomedical signal processing: electrocardiography, electroencephalography. Medical instrumentation laboratories. Design project. Pre: 488 or 588 or permission of instructor. Not for graduate credit. Not open to students who have credit in 589.

**491, 492, 493 Special Problems (1-3 each)**

Special engineering problems assigned to student according to his or her interests and capabilities. (Independent Study) Pre: permission of instructor. Not for graduate credit.

**501 Linear Transform Analysis (3)**

Fourier and Laplace transform analysis of continuous-time systems, causality and spectral factorization, evaluation of inverse transforms, z-transform analysis of discrete-time systems, Hilbert transforms, discrete Fourier transforms, generalized transforms. (Lec. 3)

**502 Nonlinear Control Systems (3)**

Analysis of nonlinear systems: phase-plane analysis, Lyapunov theory, advanced stability theory, describing functions. Design of nonlinear control systems: feedback linearization, sliding control. (Lec. 3) Pre: 503 or permission of instructor.

**503 (or MCE 503) Linear Control Systems (4)**

State-variable description of continuous-time and discrete-time systems, matrices and linear spaces, controllability and observability, pole-placement

methods, observer theory and state reconstruction, MATLAB exercises for simulation and design. (Lec. 4) Pre: 314 or MCE 366 or equivalent and MTH 215 or equivalent.

#### **504 (or MCE 504) Optimal Control Theory (3)**

Quadratic performance indices and optimal linear control, frequency response properties of optimal feedback regulators, state estimation, separation theorem, optimal control of nonlinear systems, Pontryagin's minimum principle. (Lec. 3) Pre: 503.

#### **506 Digital Signal Processing (4)**

Digital representations of signals and noise; sampling and aliasing; design of digital-processing systems for signal parameter estimation and signal detection; digital filter structures; discrete Fourier transform and FFT algorithm, periodogram. (Lec. 4) Pre: 501 and 509. May be taken concurrently.

#### **509 Introduction to Random Processes (4)**

Probability and random variables; random process characterizations and techniques. Useful models. Discrete and continuous systems with random inputs. Applications to detection, and filtering problems. (Lec. 4) Pre: MTH 451 or equivalent and knowledge of calculus, linear systems, and transform methods.

#### **510 Communication Theory (4)**

Communication theory for discrete and continuous channels. Optimum-receiver principles and signal design. Fundamentals of information theory. Channel models, modulation techniques, source encoding, error control coding, the decoding of algorithms. (Lec. 4) Pre: 509.

#### **511 Engineering Electromagnetics (3)**

Review of electrostatics and magnetostatics. Maxwell's equations, wave propagation in dielectric and conducting media. Boundary phenomena. Radiation from simple structures. Relations between circuit and field theory. (Lec. 3)

#### **525 Fiber Optic Communication Systems (3)**

Survey of important topics in optical communication devices and systems. The physical principles and operation of lasers, LEDs, fibers, and detectors are covered. (Lec. 3) Pre: 423, 331, 401 or equivalent.

#### **526 Fiber Optic Sensors (3)**

Theory and performance of different types of intensity-, phase-, and polarization-modulated fiber optic sensors (FOS) and their application areas. Properties of various active and passive devices used in building FOS. (Lec. 3) Pre: 401 or equivalent.

#### **527 Current Topics in Lightwave Technology (3)**

Current topics of importance in lightwave technology including coherent fiber optical communication systems, optical amplifiers, active and passive single-mode devices, infrared optical fibers. Material will be taken from recent literature. (Lec. 3) Pre: 525 or equivalent.

#### **531 Solid State Engineering I (3)**

Review of quantum mechanics, crystal properties, energy-band theory, introduction to scattering, generation-recombination processes, Boltzmann's transport equation, semiconductor junctions, devices. (Lec. 3) Pre: 331 or equivalent.

#### **532 Solid State Engineering II (3)**

Properties of insulators, semiconductors, conductors and superconductors from quantum mechanical principles. Semiconductor physics and band theory of solids as applied to current semiconductor and optoelectronic devices. (Lec. 3) Pre: 531 or equivalent.

#### **533 Bipolar Devices (3)**

Device physics and computer modeling of bipolar junction devices, p-n junctions, metal semiconductor contacts, heterojunctions, bipolar junction transistors, BJT modeling, small signal equivalent circuits. (Lec. 3) Pre: 331 or permission of instructor.

#### **534 MOS Devices (3)**

Device physics and computer modeling of MOS devices, capacitors, metal semiconductor contacts, PMOS, NMOS, and DMOS transistors, short channel effects, modeling, small signal equivalent circuits. (Lec. 3) Pre: 331 or permission of instructor.

#### **535 BICMOS Integrated Circuit Design (4)**

Bipolar and MOS device models, process variations and circuit performance, temperature effects, current sources, opamps, oscillators, logic, memory circuits, A to D converters, switched capacitor circuits. Student designs are fabricated and tested. (Lec 3, Lab 2) Pre: 331 and 342.

#### **537 VLSI System Design (4)**

Very large scale digital integrated circuit design. Computer simulation and testing. Large system design using hardware description languages. In lab, students participate in the design of a chip. (Lec. 3, Lab. 3) Pre: graduate or senior standing.

#### **539 Analog VLSI (3)**

Theory and techniques of analog NMOS and CMOS integrated circuits. Device modeling, circuit simulation, and chip design are studied using amplifiers, A/Ds, and switched-capacitor circuits as examples. (Lec. 3) Pre: 537.

#### **540 Theory of Integrated Circuit Testing (3)**

Introduction to product testing of digital, analog and mixed-signal integrated circuits. Defect and fault modeling, test vector generation, design-for-testability and IEEE 1149.X (boundary scan). (Lec. 3) Pre: graduate standing or permission of instructor.

#### **541 Semiconductor Test Engineering Instrumentation (4)**

Low level measurements, noise, analog integrated circuit design, testing case studies, automatic test equipment (ATE). Design and demonstrate a semi-

conductor production test using ATE. (Lec 3, Lab 3) Pre: graduate standing or permission of instructor.

#### **542 Fault-Tolerant Computing (3)**

Fault and error modeling, reliability modeling and evaluation, fault-tolerant computer systems, digital and mixed analog/digital VLSI testing, concurrent error detection, and design for VLSI yield enhancement. (Lec. 3) Pre: 405 or equivalent or permission of instructor.

#### **543 (or CSC 519) Computer Networks (4)**

Computer network architectures, data link control and access protocols for LANs, internet protocols and applications, software and hardware issues in computer communication, delay analysis, and current research in computer networking. (Lec. 4) Pre: 437 or equivalent or CSC 412 or equivalent.

#### **544 Computer Arithmetic for VLSI (4)**

Hardware algorithms and implementation of fixed and floating-point adders, multipliers and dividers. Error analysis and time/gauge complexity of arithmetic operations. Design simulation and evaluation with hardware description language. (Lec. 4) Pre: 405 or equivalent.

#### **545 Design of Digital Circuits (4)**

Design techniques for digital systems. Combinational circuits and synthesis and evaluation of finite-state machines. Test generation and design for testability for large digital systems. Hardware description language, exercises in the design and simulation of complex digital systems. (Lec. 4) Pre: 405 or equivalent.

#### **546 Design of Computer-Based Instrumentation (3)**

Design of memory systems, input-output techniques, direct memory access controllers, instrument buses, video displays, multi- and co-processors, real-time operations, device handler integration into high-level language and mass storage. (Lec 2, Lab 3) Pre: 408 or permission of instructor.

#### **548 Computer Architecture (4)**

Classification and taxonomy of computer architectures. RISC vs. CISC. Cache and virtual memory systems. Pipeline and vector processors. Multi-processor and multi-computer systems. Interprocessor communication networks. Dataflow machines. Parallel processing languages. (Lec. 4) Pre: 405 or equivalent or permission of instructor.

#### **549 Computer System Modeling (4)**

Basic techniques used in computer system modeling, queuing theory, stochastic processes, Petri net, product form networks, approximation techniques, solution algorithms and complexity, computer simulation, performance studies of modern computer systems. (Lec. 4) Pre: 548 and 509 or MTH 451.

**571 Underwater Acoustics I**

See Ocean Engineering 571.

**575 (or MTH 575) Approximation Theory and Applications to Signal Processing (3)**

Interpolation; uniform approximation; least squares approximation; Hilbert space; the projection theorem; computation of best approximations; applications to the design of filters and beamformers, position location and tracking, signal parameter estimation. (Lec. 3) Pre: advanced calculus, elements of the theory of functions of a complex variable, and elements of linear algebra.

**577, 578 Seminar in Sensors and Surface Technology (1 each)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

**581 Special Topics in Artificial Intelligence**

See Computer Science 581.

**583 (or CSC 583) Computer Vision (3)**

Algorithms used to extract information from two-dimensional images. Picture functions. Template matching. Region analysis. Contour following. Line and shape descriptions. Perspective transformations. Three-dimensional reconstruction. Image sensors. Interfacing. Applications. (Lec. 3) Pre: MTH 362 or equivalent.

**584 (or STA 584) Pattern Recognition (3)**

Random variables, vectors, transformations, hypothesis testing, and errors. Classifier design: linear, nonparametric, approximation procedures. Feature selection and extraction: dimensionality reduction, linear and nonlinear mappings, clustering, and unsupervised classification. (Lec. 3) Pre: 509 or introductory probability and statistics, and knowledge of computer programming.

**585 Digital Image Processing (3)**

Digital representation of images. Image improvement techniques: restoration models and spatial, point, spectral, and geometric operators. Image analysis: morphological operators, edge detection, feature extraction, segmentation, and shape analysis. (Lec. 2, Lab. 2) Pre: 501 and 509.

**588 Biomedical Engineering I (4)**

Medical imaging: x-rays, tomographic reconstruction techniques, angiography, radionuclide imaging, diagnostic ultrasound, magnetic resonance imaging, picture archiving and communication system. Modeling of physiological systems: the nerve system and cardiopulmonary circulation. Design project. (Lec. 3) Pre: senior standing in biomedical engineering or permission of instructor. May not be taken by students who have credit in 488.

**589 Biomedical Engineering II (4)**

Medical instrumentation: patient safety, isolation and noise-rejection techniques, pacemaker, cardiac-assist devices. Physiological measurements: pressure, flow; biosensors. Biomedical signal processing: electrocardiography and electroencephalography. Medical instrumentation laboratories. Design project. Pre: 588 or permission of instructor. May not be taken by students who have credit in 489.

**591, 592 Special Problems (1–3 each)**

Advanced work under supervision of a member arranged to suit individual requirements of student. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits.

**594 Special Topics in Electrical Engineering (1–3)**

Intensive inquiry into a certain important field of current interest in electrical engineering. (Lec. 1–3) Pre: permission of instructor.

**599 Master's Thesis Research (1–9)**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**601 Graduate Seminar (1)**

Seminar discussions presented by faculty and outside speakers on topics of current research interest. (Seminar) May be repeated for a total of 2 credits. May be taken concurrently with 602. S/U credit.

**602 Graduate Seminar (1)**

Student seminars including the presentation of research results and detailed literature surveys. May be repeated for a total of 2 credits. S/U credit.

**606 Digital Filter Synthesis (3)**

Review of z-transforms and discrete-time systems, properties of digital-filter networks, design of finite and infinite-impulse-response filters, accuracy considerations for coefficients and data, hardware implementation, system examples. (Lec. 3) Pre: 506 or equivalent.

**610 Applications of Information Theory (3)**

Information theoretic underpinnings and practical techniques for data compression, channel coding for error control, and encryption and cryptography for secure information transmission. (Lec. 3) Pre: 509 or permission of instructor

**625 Guided Waves in Optical and IR Fibers (3)**

Guided electromagnetic wave aspects of optical and IR fibers, novel approximation methods for solution of vectorial and scalar wave equations in optical fibers, theory of transparency and nonlinear optical interactions in solids as applied to design of optical fibers. (Lec. 3) Pre: 511 and 525.

**648 Advanced Topics in Computer Architectures (3)**

Modern high-performance computer structures, parallel and distributed hardware and software,

instruction level parallelism, memory hierarchy, fault tolerant computing, and future generation computers. (Lec. 3) Pre: 548.

**658 Instruction Level Parallelism (4)**

Advanced architectural methods for improving microprocessor performance. Branch effect reduction techniques based on both hardware and software. Reduced control dependencies, branch prediction, speculative execution, eager execution, disjoint eager execution. (Lec. 3) Pre: 548 or equivalent.

**661 Estimation Theory (3)**

Extraction of information from discrete and continuous data, best linear estimation, recursive estimation, optimal linear filtering, smoothing and prediction, nonlinear state and parameter estimation, design and evaluation of practical estimators. (Lec. 3) Pre: 503 and 509.

**665 Modulation and Detection (3)**

Advanced treatment of modulation and detection theory. Minimum meansquare error, maximum likelihood, and maximum posterior probability estimators. Applications to communications systems and to radar and sonar systems. (Lec. 3) Pre: 510.

**670 Advanced Topics in Signal Processing (3)**

Seminar for advanced students. Selected topics of current research interest. Material will be drawn primarily from recent literature. (Lec. 3) Pre: 506 and 606.

**672 Underwater Acoustics II**

See Ocean Engineering 672.

**677 (or OCE 677) Statistical Sonar Signal Processing (3)**

Basic results in probability and statistics, signal processing, and underwater acoustics are applied to the design of detection, estimation, and tracking in active sonar, passive sonar, and underwater acoustic communication. (Lec. 3) Pre: MTH 451 or ELE 509, ELE 506, and ELE 571 (or OCE 571), or equivalents. ELE 510 is useful and closely related, but not required.

**691, 692 Special Problems (1–3 each)**

Advanced work under supervision of a member arranged to suit individual requirements of a student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. S/U credit.

**694 Advanced Special Topics in Electrical Engineering (1–3)**

Intensive inquiry into a certain important field of current interest in electrical engineering, requiring advanced sophistication of a 600-level course. (Lec. 1–3) Pre: permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Engineering (EGR)

### 091 Cooperative Education Internship: Part-Time (0)

Educational work experience in a selected engineering field. Ten to 20 hours per week at the employer's facility. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average.

### 092 Cooperative Education Internship: Full-Time (0)

Educational work experience in a selected engineering field. Students will work full-time as determined by the employer. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average.

### 105 Foundations of Engineering I (1)

Introduction to engineering. Problem solving. (Lec. 1)

### 106 Foundations of Engineering II (2)

Engineering problem solving. (Lec. 1, Lab. 2) Pre: MTH 141 or concurrent registration in MTH 141.

### 316 (or PHL 316) Engineering Ethics (3)

A broad introduction to moral theory and its application to engineering, professionalism, and moral responsibility as an engineer. An understanding of engineering in a societal context. (Lec. 3) Pre: sophomore standing. (L)

### 411 (or GER 411) Advanced Technical German (3)

Seminar on advanced scientific and engineering topics in an international context. All reading, discussion, and associated writing is conducted in German. (Lec. 3) Pre: any 400-level course in German and senior standing in an approved engineering program. Not for graduate credit.

### 412 (or SPA 412) Advanced Technical Spanish (3)

Seminar on advanced scientific and engineering topics in an international context. All reading, writing and discussion will be conducted in Spanish. (Seminar) Pre: any 400-level course in Spanish and senior standing in an approved engineering program. Not for graduate credit.

## English (ENG)

*Chairperson:* Professor Donnelly

### 110 Introduction to Literature (3)

Analysis of literature through reading and discussion of a number of genres derived from a variety of literary cultures. (Lec. 3) Not available for English major credit.

### 160 (or CLS 160) Literatures of the World (3)

Introduction to significant works of world literature. (Lec. 3) (A)

### 201 Principles of Literary Study (3)

Introduction to the study of literature through reading and discussion of major theories, philosophies, and approaches in the discipline. (Lec. 3) Restricted to English majors. Must be taken in freshman or sophomore year.

### 202 Critical Methods in Literary Study (3)

Introduction to critical analysis through reading and discussion of major methodologies, analytical approaches, and perspectives in literary study. (Lec. 3) Pre: 201. Restricted to English majors. Must be taken in freshman or sophomore year.

### 205 Creative Writing (3)

Writing and analysis of works written by class members and professional writers. 205A Poetry; 205B Fiction; 205C Nonfiction. In 205C, type of writing varies with instructor. (Lec. 3)

### 241, 242 U.S. Literature I, II (3 each)

241: Selections from U.S. literature, beginnings to the mid-19th century. 242: Selections from U.S. literature, mid-19th century to the present. 241 not required for 242. (Lec. 3) (A)

### 243 The Short Story (3)

Critical study of the short story from the early 19th century to the present (Lec. 3) (A) Professor Kunz' section is Writing Intensive [WI]

### 247 (or AAF 247) Introduction to Literature of the African Diaspora (3)

Major themes, genres, and motifs of the literatures of Africa and the Americas. Focus on one or more of these regions. Study of black oral and written literatures with emphasis on cultural, historical, political, and socioeconomic contexts. (Lec. 3) (A)

### 248 (or AAF 248) African American Literature from 1900 to the Present (3)

Twentieth-century African American literature, with emphasis on major issues, movements, and trends, including the study of W.E.B. DuBois, the Harlem Renaissance, the civil rights movement, and the black arts movement. (Lec. 3) (A)

### 251, 252 British Literature I, II (3 each)

251: Selections from British literature, beginnings to 1798. 252: Selections from British literature, 1798 to the present. (Lec. 3) 251 not required for 252. (A) for 251; (A) (F) for 252

### 260 Women and Literature (3)

Critical study of selected topics. (Lec. 3) (A)

### 262 Introduction to Literary Genres: Nonfiction (3)

Introduction to the study of various types of non-fiction prose. (Lec. 3)

### 263 Introduction to Literary Genres: The Poem (3)

Introduction to the study of the poem. (Lec. 3) (A) Professor Stein's section is Writing Intensive [WI]

### 264 Introduction to Literary Genres: The Drama (3)

Introduction to the study of the drama. (Lec. 3) (A)

### 265 Introduction to Literary Genres: The Novel (3)

Introduction to the study of the novel. (Lec. 3) (A)

### 280 Introduction to Shakespeare (3)

Introduction to the major plays and poetry of Shakespeare. (Lec. 3) (A)

### 300 Literature into Film (3)

Analysis of themes, techniques, printed and film narratives. 300A Drama; 300B Narrative. (Lec. 3)

### 302 Topics in Film Theory and Criticism (3)

Introduction to film theory and criticism. Emphasis on semiotics, auteur theory, psycho-analysis, genre studies, feminist theory, materialist critique, or cultural studies, with focus on range of popular, experimental, and documentary film traditions. May be repeated for credit when taken with different emphasis. (Lec. 3)

### 303 Cinematic Auteurs (3)

Literary study of one or more major directors with a substantial body of work exhibiting recurrent themes and distinctive style (e.g. Hitchcock, Kubrick, Kurasawa). Emphasis will vary. May be repeated once with different director. (Lec. 3)

### 304 Film Genres (3)

Literary study of the particular conventions and evolution of one or more film genres (e.g. Romantic Comedy, Science Fiction, Western). Emphasis will vary. (Lec. 3) May be repeated once with a different genre.

### 305 Advanced Creative Writing (3)

For students with talent and experience in creative writing and a good reading background in the genre(s) they wish to write in, whether short fiction, drama, or poetry. (Lec. 3) May be repeated.

### 330 The Structure of American English (3)

Introduction to the phonology, morphology, and syntax of American English. Emphasis on skills needed to understand the prescriptive rules of grammarians and the descriptive rules of critics and teachers. (Lec. 3) (S)

### 332 The Evolution of the English Language (3)

History of English from a minor dialect of the North Sea to a major language of the Renaissance. Focus on the languages and cultures of Beowulf, Chaucer, and Shakespeare. (Lec. 3) (S)

### 335 Interdisciplinary Studies in Comparative Literature

See Comparative Literature Studies 335.

### 336 The Language of Children's Literature (3)

Introduction to stylistic analysis using children's literature. Focus on sound patterns, word choice,

and sentence structure to discuss appropriateness, interpretation, and evaluation. Emphasis on one writer or work. (Lec. 3)

### 337 Varieties of American English (3)

Study of regional and social dialects of American English. Emphasis on variations in pronunciation and word choice and on New England varieties. Includes independent or group field projects. Course contains language that may be offensive to some students. (Lec. 3)

### 338 Native American Literature (3)

Study of the literature of Native America. Considers early texts including mythology, legends, and traditions as well as contemporary works. (Lec. 3) (A) (F)

### 339 Literary Nonfiction (3)

Intensive study in one or more forms of nonfiction narrative (memoir, nature meditation, medical narrative, extended journalistic account, true crime, science narrative, historical account). (Lec. 3) May be repeated once for a total of 6 credits when taken with different emphasis.

### 347 Antebellum U.S. Literature and Culture (3)

Study of pre-Civil War poetry and prose (the period formerly known as the American Renaissance/ American Romantic movement). Readings may include Emerson, Douglass, Hawthorne, Melville, Stowe, Fern, Whitman, and others. (Lec. 3)

### 348 U.S. Literature and Culture from 1865 to 1914 (3)

Study of post-Civil War poetry and prose. Readings may include Chesnutt, Chopin, Crane, DuBois, James, Twain, Wharton, and others. (Lec. 3)

### 350 Literary Theory and Criticism

See Comparative Literature Studies 350.

### 351 History of Literary Theory and Criticism (3)

Intensive study of the problematization of representation in works selected from classical to contemporary thought. (Lec. 3)

### 355 Literature and the Sciences (3)

Study of the representation of scientific themes in literature and/or the relationship between literature and the sciences. (Lec. 3) Pre: Junior or senior standing. Enrollment priority given to students majoring in the sciences. (A)

### 356 Literature and the Law (3)

Study of the representation of legal themes in literature and/or the relationship between literature and the law. (Lec. 3) Pre: Junior or senior standing. Enrollment priority given to students with career interests in law. (A)

### 357 Literature and Medicine (3)

Study of the representation of medical themes in literature and/or the relationship between literature and medicine. (Lec. 3) Pre: Junior or senior stand-

ing. Enrollment priority given to students with interest in medical careers. (A)

### 358 Literature and Business (3)

Study of the representation of business themes in literature and/or the relationship between literature and business. (Lec. 3) Pre: Junior or senior standing. Enrollment priority given to students majoring in business. (A)

### 360 Africana Folk Life

See African and African American Studies 360.

### 362 (or AAF 362) African American Literary Genres (Other than Short Story and Novel) (3)

Study of drama and poetry in the continued oral and written heritage of Africa and America. Focus on Baraka, Bullins, Dunbar, Giovanni, Hughes, and Walker. (Lec. 3)

### 363 (or AAF 363) African American Fiction (3)

Study of formal and thematic developments in the African American novel and short story. Focus on Baldwin, Chesnutt, Ellison, Gaines, Hurston, Jacobs, Marshall, Morrison, Naylor, Reed, Walker, Wideman, Wilson, and Wright. (Lec. 3)

### 364 (or AAF 364) Contemporary African Literature (3)

Study of contemporary African literature by genre, region, or theme, with emphasis on literary traditions, issues, and socio-cultural contexts. (Lec. 3)

### 366 Greek and Roman Drama (3)

Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. (Lec. 3) (A) (F)

### 367 The Epic (3)

Studies in epic literature from Homer to the modern period. Historical emphasis will vary with instructor. (Lec. 3) (A)

### 368 The Bible (3)

Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. (Lec. 3) (A)

### 373 British Literature of the Renaissance (3)

Study of the works of major Renaissance writers such as Wyatt, Sidney, Daniel, Spenser, Marlowe, Hobbes, and others. (Lec. 3) (A) (F)

### 374 British Literature: 1660–1800 (3)

Study of major trends in late 17th- and 18th-century verse, prose, drama, and fiction by such writers as Dryden, Behn, Congreve, Pope, Swift, and Johnson. (Lec. 3)

### 375 British Literature of the 19th Century (3)

Poetry, drama, fiction, and onfiction selected from Romantic and/or Victorian writers such as Blake, Wordsworth, Coleridge, the Shelleys, Byron, Keats, the Brownings, Eliot, the Brontes, Dickens, Pater,

and Wilde. (Lec. 3)

### 378 Postmodern and Contemporary Literature (3)

Poetry, drama, fiction, and nonfiction of the mid-to late 20th-century. Works selected from such writers as Acker, Bellow, Dove, Morrison, Rich, Rushdie, and Walcott. (Lec. 3)

### 381 Topics in Medieval and Renaissance Literature (3)

Emphasis on cultural and interdisciplinary issues and the relationship between these periods and the contemporary one. (Lec. 3) May be repeated once with a different topic. (A)

### 382 Medieval and Renaissance Authors (3)

Studies in works by one or two major Medieval or Renaissance authors (excepting Shakespeare). Emphasis on work of Chaucer, Dante, Milton, or Spenser. (Lec. 3) May be repeated once, barring duplication of writers. (A)

### 383 Modernist Literature, 1900–1945 (3)

Poetry, drama, fiction, and/or nonfiction prose with an emphasis on writers such as Eliot, Faulkner, Hurston, Joyce, Stevens, Yeats, Woolf, and Wright. (Lec. 3)

### 385 Women Writers (3)

Analysis of the poetry, drama, or fiction of women writers. Emphasis on 19th-century, 20th-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. (Lec. 3)

### 387 Foundational Texts in Modern Gay and Lesbian Culture (3)

Study of literary works that trace the origins and on-going definitions of modern homo/heterosexual identities. Selections from writers such as Whitman, Wilde, Proust, Woolf, Lawrence, Gide, Mann, Cather, and Baldwin. (Lec. 3)

### 394, 395 Independent Study (1–3 each)

Extensive individual study and research, culminating in a substantial essay. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits.

### 396 Literature of the Sea: The Rumowicz Seminar (3)

Poetry and prose of the sea. Guest lecturers and field trips. (Lec. 3)

### 397 The Literary Landscape of Britain (3)

Taught in England, second summer session. Examines impact of English social and natural landscapes on, and their treatment in, selected literary works. (Lec. 3) Usually taught in conjunction with HIS 397. (F)

### 399 Special Topics in Literature (3)

Specialized topics in the study of literature offered by specialists in the field. (Lec. 3)

**446 Modern Drama (3)**

Studies in major works by modern playwrights. (Lec. 3)

**447 Modern Poetry (3)**

Study of major contributions and movements in poetry from 1900 to the present. (Lec. 3)

**448 Traditions of the Novel in the Americas (3)**

Studies in the North, South, and/or Central American novel. (Lec. 3)

**469 The Modern Novel (3)**

Studies in the novel from 1900 to the present. (Lec. 3)

**472 Shakespeare (3)**

Studies in Shakespeare's drama and poetry. (Lec. 3)

**474 (or AAF 474) Literature of the African Diaspora (3)**

Study of specific authors, literary movements, or comparative themes in the literatures of Africa and the Americas, with a focus on one or more of these regions. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

**480 British Restoration and Enlightenment Authors (3)**

Studies in works by one or two major Restoration and Enlightenment authors. (Lec. 3.) May be repeated once for a total of six credits, barring duplication of writers.

**482 American Enlightenment Authors (3)**

Studies in works by one or two major Enlightenment authors. (Lec. 3) May be repeated once for a total of six credits, barring duplication of writers.

**485 U.S. Authors (3)**

Studies in works by one or two major United States authors. (Lec. 3) May be repeated once for a total of 6 credits barring duplication of writers.

**486 British Authors (3)**

Studies in works by one or two major British authors. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

**487 World Authors (3)**

Studies in works by one or two major world authors (excepting U.S. or British authors). (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

**493, 494 Internship in English (3)**

Exploration of career goals and job opportunities. Participate in a variety of work situations, supervised by both faculty member and on-site personnel. 120 hours per 3 credits, weekly one-hour class meeting. (Practicum) Pre: 18 credits in English and permission of chairperson. May be taken for a total of 6 credits, only 3 of which may be used as credit toward the English major. Not for graduate credit. S/U only.

**495 Identity Studies Capstone (3)**

Topics in U.S. ethnic identity. Study of the representation of the major theories of ethnic and cultural identity in the United States (Lec. 3) Pre: 6 credits in this focus area. Open only to junior or senior English majors enrolled in identity studies focus area. Not for graduate credit.

**496 Genre Studies Capstone (3)**

Study of the development of and central issues involved in the contemporary debate regarding the significance of genre studies. (Lec. 3) Pre: 6 credits in this focus area. Open only to junior or senior English majors enrolled in genre studies focus area. Not for graduate credit.

**497 (or WRT 497) Creative or Professional Writing and Publishing Capstone (3)**

Emphasis on editing and writing skills appropriate for various kinds of publishing. Study of issues relevant to publishing industries. (Lec. 3) Pre: 6 credits in this focus area. Open only to junior or senior English majors enrolled in creative or professional writing and publishing focus area. Not for graduate credit.

**498 Cultural Studies with Period Emphasis Capstone (3)**

Study of debates and issues in cultural studies. (Lec. 3) Open only to junior and senior English majors enrolled in cultural studies focus area. Pre: 6 credits in this focus area. Not for graduate credit.

*All 500-level courses require graduate standing or permission of instructor. All courses except ENG 510 and 512 may be repeated once if emphasis changes.*

**501 Workshop in Creative Writing (3)**

Close supervision and discussion of creative writing, including poetry, nonfiction, short prose forms, scripts, and novels. (Lec. 3)

**510 Introduction to Professional Study (3)**

Orientation to the major discourses, critical frameworks, and databases constituting graduate research in language and literary studies, including computer-assisted research methodologies. (Lec. 3)

**512 Modern Rhetorical Theory**

See Writing 512.

**514 Studies in Critical Theories (3)**

Introduction to historical or contemporary studies in critical theory; e.g., modernity and postmodernity, aesthetics, politics, interpretative traditions, audiences. May explore semiotic, psychoanalytic, materialist, feminist, postcolonial, and cultural theories. (Lec. 3)

**520 Studies in Composition and Reading Research**

See Writing 520.

**535 Old English (3)**

Introduction to the language and literature. (Lec. 3)

**540 Studies in American Texts Before 1815 (3)**

Cultural texts and topics of the Western Hemisphere before 1815: literary and nonliterary writings and genres; exploration and captivity narrative; African transmissions; critical theory; culture, gender, race, and class. (Lec. 3)

**543 Studies in 19th-Century American Texts (3)**

Literary and nonliterary cultural texts, genres, and topics of the Western Hemisphere. May include media; oral, industrial, and popular cultures; critical theory and the analysis of discourses; issues of class, gender, and race. (Lec. 3)

**545 Studies in American Texts After 1900 (3)**

Modern, contemporary, and postmodern cultural texts, genres, and topics of the Western Hemisphere; e.g., literary and nonliterary writings, performance modes, media, theory, and cultural studies of race, genre, and class. (Lec. 3)

**550 Studies in British Texts Before 1700 (3)**

Literary and nonliterary cultural texts and genres of the medieval, Renaissance, and Restoration periods. May include oral and written forms; the roles of audience, gender, class, and other social relations. (Lec. 3)

**553 Studies in British Texts 1700–1832 (3)**

Literary and nonliterary cultural texts and genres during the Restoration, Augustan, Enlightenment, and Romantic periods; e.g., drama, media, rhetoric, theory, and discourse analysis of gender, class, race, and other social relations. (Lec. 3)

**555 Studies in 19th-Century British Texts (3)**

Literary and cultural texts and genres during the nineteenth century. May include drama and other performance modes; critical theory and the analysis of discourses; representations of class, gender, and race. (Lec. 3)

**557 Studies in British Texts After 1900 (3)**

Modern, contemporary, and postmodern cultural texts; e.g., literary and nonliterary writings, drama, colonial and European cultural relations, film, theory, and cultural studies of institutional life and other social relations. (Lec. 3)

**560 Studies in European Texts (3)**

Introduction to the study of European texts in translation. May include different historical periods; literary and nonliterary writings; theory; film; rhetoric; and issues of culture, gender, race, class, and sexuality. (Lec. 3)

**570 Studies in Postcolonial Texts (3)**

Investigation of similarities and differences between nonoccidental and occidental genres; traditions and practices of postcolonial oral, written, and

visual cultural forms from Africa, Australia, New Zealand, the Americas, India, Ireland, and Scotland. (Lec. 3)

### 590 Selected Topics (1–3)

Selected topics in American and British literature and topics of special interest not covered by traditional department offerings. (Independent Study)

### 595 Master's Project (1–6)

Number of credits to be determined each semester in consultation with the major professor or director of graduate studies. S/U only.

*All 600-level (seminar) courses require graduate standing or permission of instructor. Courses include specialized topics, intensive readings, occasional lectures, and frequent presentation of ongoing research by students. A substantial research project is required. May be repeated once if emphasis changes.*

### 601 Seminar in Creative Writing (3)

Seminar for advanced students under supervision of a member arranged to suit individual project requirements of students. (Seminar)

### 605 Seminar in Genres (3)

In-depth study of a single or several genres and/or subgenres, such as epic, drama, or horror film. (Seminar)

### 610 Seminar in Historical Periods (3)

Selected topics of relevance for historical periods. Periods emphasized are medieval, sixteenth- and seventeenth-century British, eighteenth- and nineteenth-century British, North American, and postcolonial. (Seminar)

### 615 Seminar in Authors (3)

In-depth and critical study of selected works of one or two authors from any historical period, genre, or medium; theories and traditions of authorship; authorship and gender. (Seminar)

### 620 Seminar in Culture and Discourse (3)

Contrasting theoretical conceptions of culture, discursive practices, hegemony, the public and private spheres, and related concerns; may cross any historical formation or period. (Seminar)

### 625 Seminar in Media (3)

Critical and theoretical conceptions of one or more media across any historical formation or period. (Seminar)

### 630 Seminar in Canons (3)

Critical and theoretical conceptions of canons and canonicity, including emerging or revisionist canons. (Seminar)

### 635 Seminar in Subjectivities (3)

Critically investigates class, race, gender, sexuality, and/or other subject positions as they are constructed by literary or other media. Might emphasize reading and writing communities, form and ideology, or identity politics. (Seminar)

### 645 Seminar in Rhetoric and Composition (3)

Critical and theoretical conceptions of rhetoric and rhetoricality with varying historical periods and/or connections to cultural studies, literature, and composition studies. (Seminar)

### 650 Seminar in Critical Theory (3)

In-depth study of one or several critical theories such as psychoanalytic, feminist, postcolonial, and cultural studies. (Seminar)

### 660 Seminar in Special Topics (3)

Topics of special interest not covered by other offerings. (Seminar)

### 690 Independent Graduate Study (1–6)

Number of credits is determined each semester in consultation with the major professor, director of graduate studies, and chairperson.

### 691, 692 Independent Graduate Study (3 each)

Advanced study of an approved topic under the supervision of a member. (Independent Study)

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### 999 Methods of Teaching Literature (0)

Materials and various methods of teaching literature on the college level. Required of teaching assistants who will teach English department literature courses as part of their TA assignment. (Seminar) Pre: graduate standing.

## English Language Studies (ELS)

Director: L. Ronesi

### 112 English as a Second Language I (3)

Equivalent to WRT 101, but restricted to students whose first language is not English. Designed to enhance students' speaking and oral presentation skills as well as writing. (Lec. 3) (Cw)

### 122 English as a Second Language II (3)

Companion course of 112. (Lec. 3) (Cw)

### 200 English Language Fellows Training Course (3)

Introduction to cross-cultural issues, social and academic barriers facing U.S. newcomers, content-based second language learning, and the social and academic aspects of peer collaboration. A training course for proficient speakers of English who have been admitted to the English Language Fellows Project. (Lec. 3) Service learning. Pre: admission to the English Language Fellows Project.

### 201 Content-Based English Language Studies (1)

Small tutorial sections, taken concurrently with other courses through the English Language Fellows Project, for nonnative speakers who wish to continue studying English while taking other courses. (Lab. 2) Service learning. Pre: permission

of English Language Fellows Project director. Maximum of 3 credits each semester; may be repeated for a total of 12 credits. S/U only.

### 512 Oral Communication Skills for International Teaching Assistants (3)

Intensive focus on pronunciation, listening and speaking skills, and awareness of colloquial American speech. (Lec. 3) Pre: graduate standing and permission of instructor. May be repeated until oral proficiency requirement is met.

### 612 Advanced Communication Skills for International Teaching Assistants (3)

Focus on pronunciation, teaching skills, and cross-cultural differences in education. Priority given to international teaching assistants. (Lec. 3) Pre: graduate standing. May be repeated until oral proficiency requirement is met.

## Entomology (ENT)

Chairperson: Professor Casagrande

### 385 (or BIO 381) Introductory Entomology (3)

Introduction to the diverse components of entomology, emphasizing basic principles of insect morphology, physiology, behavior, and ecology. Current topics in insect biodiversity and management strategies. (Lec. 3) Pre: BIO 104A or 102 and BIO 104B or 101, or equivalent.

### 386 (or BIO 382) Introductory Entomology Laboratory (1)

Insect structure, function, and systematics with field studies in ecology, survey, and collection of beneficial and pest insects in their natural environment. (Lab. 3) Pre: 385 or concurrent enrollment in 385.

### 387 Insects of Turf and Ornamentals (3)

Biology, ecology, and management of insects affecting turfgrasses, trees, and ornamental plants. (Lab. 3) Pre: PLS 200 or permission of instructor.

### 390 (or AVS 390) Wildlife and Human Disease (3)

Introduction to the important diseases of humans carried by wildlife, including surveillance, epidemiology, transmission, public health impact, and prevention. Interdisciplinary approach with emphasis on problem solving using real-life examples. (Lec. 3) Pre: BIO 104B or 101; BIO 262 or ENT 385 or equivalent.

### 411, 511 Pesticides and the Environment (3 each)

Review of the historical issues regarding pesticides, regulation, how they work, and costs/benefits associated with their use. Pre: BIO 102, CHM 103, 105; PLS 200, or permission of instructor. 411: not for graduate credit.

### 519 Insect Biological Control (3)

Natural regulation of pest abundance. Theoretical issues and practical experience in the use of bio-

logical controls for managing insect and weed problems. (Lec. 2, Lab. 1) Pre: 385 or permission of instructor. In alternate years. Next offered spring 2004.

### **520 Insect Morphology and Physiology (3)**

An introduction to the structure and function of the insects and related arthropods. (Lec. 2, Lab. 2) Pre: 385 or permission of instructor

### **529 Systems Science for Ecologists (3)**

Concepts and techniques for computer analysis and simulation of complex biological systems. (Lec. 3) Pre: MTH 141, BIO 262, or permission of instructor.

### **533 Graduate Writing in Life Sciences (3)**

Graduate writing skills for the life and environmental sciences; writing and editing journal articles, proposals; rhetorical analysis of scientific writing. (Lec. 2, Lab. 2) Pre: WRT 101 or equivalent or permission of instructor. Graduate standing or senior status. Next offered spring 2003.

### **544 Insect Ecology (2)**

Ecology of insects and other terrestrial arthropods at the physiological, individual, population, community, and ecosystem levels. Pre: permission of instructor. In alternate years. Next offered fall 2003.

### **550 Insect Taxonomy and Systematics (3)**

External morphology of insects and taxonomy of major families. (Lec. 2, Lab. 2) Pre: 385. In alternate years. Next offered fall 2003.

### **555 Insect Pest Management (3)**

Evaluation of past and present pest-control strategies in light of insect ecology. Development of pest-management systems emphasizing biological control, resistant plants, and ecosystem redesign. (Lec. 3) Pre: PLS 200 or ENT 385 or permission of instructor. In alternate years, next offered spring 2003.

### **561 Aquatic Entomology (3)**

Biology of insects in aquatic environments, including systematics, morphology, and ecology. Field trips emphasize relations between species and habitat and the role of insects in aquatic management programs. (Lec. 2, Lab. 3) Pre: 385 or permission of instructor. In alternate years. Next offered fall 2002.

### **571 (or MIC 571) Insect Microbiology (3)**

A two-part investigation of insect-microbe associations, concentrating on the comparative pathobiology of microbial agents in the insect host and the transmission of disease organisms by the insect vectors. (Lec. 3) Pre: 385 and MIC 211, or permission of instructor. In alternate years, next offered spring 2003.

### **586 Medical and Veterinary Entomology**

See Biological Sciences 572.

### **591, 592 Special Problems in Entomology (1–3 each)**

Advanced independent research projects supervised by members of the research and unrelated to thesis research. Projects developed to meet individual needs. (Independent Study) Pre: permission of instructor by override only.

## **Environmental Sciences (EVS)**

*Dean:* Professor Seemann

### **101 Freshman Inquiry into the Environment and Life Sciences (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the College of the Environment and Life Sciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

### **366 Communicating Environmental Research and Outreach (2)**

Value and techniques of communicating scientific research and outreach efforts. Focus on technical and communication skill development. Student must be engaged in a personal research or outreach experience. (Seminar) Pre: permission of instructor; by override only.

### **482 Innovative Subsurface Remediation Technologies**

See Geosciences 482.

### **484 Environmental Hydrogeology**

See Geosciences 484.

### **582 Innovative Subsurface Remediation Technologies**

See Geosciences 582.

### **584 Environmental Hydrogeology**

See Geosciences 584.

### **598 Nonthesis Master's Research**

Independent investigation to satisfy research requirement under nonthesis option of M.S. degree in environmental sciences. Substantial paper required. (Independent Study)

### **599 Master's Thesis Research**

To be taken by students in the Master of Science in environmental sciences degree program. Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### **601 Environmental Sciences Seminar**

See Geosciences 601.

### **699 Doctoral Dissertation Research**

To be taken by students in the Ph.D. in environmental sciences degree program. Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Exercise Science (EXS)**

*Co-Chairpersons:* Associate Professor Blanpied and Professor Manfredi

### **530 Research Methods and Design in Physical Education and Exercise Science**

See Physical Education and Exercise Science 530.

### **531 Advanced Experimental Techniques in Exercise Science (3)**

Instruction in using the computer for research purposes with an emphasis on data analysis (i.e., statistical techniques). (Lec. 3) Pre: 530 or permission of instructor.

### **559 Principles of Exercise Testing and Interpretation (3)**

Theory and practical application of the graded exercise test including oxygen consumption measurements. Special emphasis on writing a safe exercise prescription based on the interpretation of the exercise test data. (Lec. 3) Pre: BIO 343 or permission of instructor.

### **562 Advanced Exercise Physiology (3)**

Advanced study of the physiological factors limiting physical performance and work capacity with emphasis on the effects of physical conditioning on health and fitness. (Lec. 3) Pre: BIO 343 or permission of instructor.

### **563 Fitness Programs for the Middle-Aged and Elderly (3)**

Presentation of exercise epidemiology and the effects of exercise on health. Scientific principles of exercise prescription with emphasis on adults with common health problems such as obesity, diabetes, and osteoporosis. (Lec. 3) Pre: graduate standing or permission of instructor.

### **564 Physiology of Aging (3)**

Library searches, reports, and discussion of topics of current research on the physiology of aging. Subject matter adapted to meet interests of and students. (Lec. 3) Pre: BIO 242 or permission of instructor.

### **565 Cardiovascular Rehabilitation (3)**

Focus on cardiac rehabilitation, underlying pathology and pathophysiology, diagnostic and prognostic testing, and principles of rehabilitation. Special emphasis on electrocardiographic analysis and exercise intervention. (Lec. 3) Pre: BIO 343 or permission of instructor.

### **581 (or PSY 581) Psychological Aspects of a Healthy Lifestyle (3)**

Considers the psychological processes and behaviors related to exercise participation and the adoption of a healthy lifestyle. Analysis of models and theories used in exercise psychology, associated research, and the implications for practitioners. (Lec. 3) Pre: graduate standing, PSY 113 and 232, or permission of instructor.



**582 Sport Psychology**

See Physical Education and Exercise Science 582.

**591 Special Problems**

See Physical Education and Exercise Science 591.

**592 Internship in Physical Education and Exercise Science**

See Physical Education and Exercise Science 592.

**595 Independent Study**

See Physical Education and Exercise Science 595.

**599 Master's Thesis Research**

See Physical Education and Exercise Science 599.

**Film Studies (FLM)**

*Coordinator:* Adjunct Professor DeSchepper

**101 Introduction to Film and Screen Studies (3)**

Introduction to techniques of film practice, film history, genres, analysis of film texts, and reading of film images in their aesthetic, cultural, and literary context. (Lec. 2, Lab. 2) (A)

**201 History of Film (3)**

Significant and representative narrative, documentary, and experimental films from the earliest days of cinema to movies in the age of video. Contributions of individual filmmakers, contexts of production and distribution. (Lec. 2, Lab. 2) Pre: 101 or permission of instructor. (A)

**203 Film Theory (3)**

An introductory survey of classical and contemporary approaches to film theory and criticism. 3) Pre: 101 or permission of instructor. (A)

**401 Field Experience in Film Studies (1-6)**

Structured academic work in a business, industry, educational or agency setting under the supervision of a faculty advisor. (Practicum) Pre: permission of faculty advisor.

**495 Seminar in Film Studies (3)**

An intensive, interdisciplinary capstone course; exploring writings and ideas about film across two or more fields of study; or examining cross-cultural themes and issues in world cinema. Topic to be announced. (Seminar) Pre: 201 and 203 or permission of instructor.

*Following are related courses offered in African and African-American Studies, Art, Art History, Communication Studies, English, French, History, and Italian.*

**African and African-American Studies****352 Black Images in Film****Art****215 Video and Filmmaking I****316 Video and Filmmaking II****Art History****374 Topics in Film****376 History of Animation****377 History of Experimental Film****Communication Studies****341 Documentary Pre-production****342 Documentary Production****English****300A Literature into Film: Drama****300B Literature into Film: Narrative****302 Topics in Film Theory and Criticism****303 Cinematic Auteurs****304 Film Genres****French****320 Studies in French Cinema****History****358 Recent America in Film****Italian****315 Italian Cinema**

*In addition, special topics in film studies such as ART 303 Topics in Studio (ART 303H Video Art) and WMS 350F Women in Film are also offered.*

**Finance (FIN)**

*Dean:* Professor Mazze

**301 Financial Management (3)**

An analysis of the investment and financing issues facing domestic and multinational business firms. (Lec. 3) Pre: ECN 201, ACC 202, and BAC 202, or permission of instructor. Proficiency test available.

**322 Security Analysis (3)**

Problems in investing funds from the point of view of individual and institutional investors. Particular attention is given to analysis of current investment theories and international implications. (Lec. 3) Pre: credit or concurrent enrollment in 301.

**331 Financial Institutions and Markets (3)**

Comprehensive analysis of financial institutions and the markets in which they operate. Emphasis on the internal operations of the institutions. (Lec. 3) Pre: ECN 201, ACC 202, and BAC 202, or permission of instructor.

**341 Fundamentals of Real Estate (3)**

Analysis of real estate principles. An examination of land utilization, valuation, financing techniques, urban development, property rights, markets, and government regulation. (Lec. 3) Pre: ECN 201.

**401 Advanced Financial Management (3)**

Intensive research on selected current topics relating to the financial management of the firm. Extensive use of the case method. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration.

**420 Speculative Markets (3)**

Examination of the concepts of forward pricing and its applications to the area of commodity and financial futures and options. (Lec. 3) Pre: 301 or permission of instructor.

**425 Portfolio Theory and Management (3)**

Examination of portfolio theory and current portfolio management practices from the individual and institutional view. Techniques for portfolio building, management, and performance evaluation are discussed. (Lec. 3) Pre: 322 or permission of instructor. Not for graduate credit for students in the College of Business Administration.

**433 Bank Financial Management (3)**

Nature of the financial decisions facing the management of an individual bank. Current bank financial practices, research, and appropriate banking models considered. (Lec. 3) Pre: 301, 331, or permission of instructor. Not for graduate credit for students in the College of Business Administration.

**441 Financial Theory and Policy Implications (3)**

Examination of the determinants of long-run financial success of the firm. Includes a study of how the capital budgeting process is linked to capital structure management. (Lec. 3) Pre: 301. Not for graduate credit.

**452 Multinational Finance (3)**

Methods of financing multinational corporations. Foreign exchange, translation of financial statements, multinational funds flow and international liquidity, international financial reporting and tax policy, international money, stock, and bond markets. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration.

**455 Global Investment Management (3)**

Detailed analysis of the problems encountered in the process of investing funds in international capital markets. Particular attention is devoted to multi-currency dimensions, foreign information sources, and foreign regulations. (Lec. 3) Pre: 301, 322.

**460 Basic Managerial Economics (3)**

Introduction to the classic theories of demand, production, and cost management in the context of modern financial theory. Includes empirical model building using microcomputers. (Lec. 3) Pre: 301. Not for graduate credit.

**491, 492 Directed Study (1-3 each)**

Directed readings and research work involving financial problems under the supervision of members of the. Plan of study required. (Independent Study) Pre: permission of instructor. Not for graduate credit for students in the College of Business Administration.

**493 Internship in Finance (3)**

Approved, supervised work experience with participation in management and problem solving related to finance. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for a maximum of 6 credits. Not for graduate credit. S/U only.

**622 Security and Investment Analysis (3)**

Analysis of the problems of investing funds and managing investments. Use of the latest investment theories and their implementation via quantitative techniques will be explored. (Lec. 3) Pre: 601 or equivalent.

**625 Advanced Portfolio Theory and Security Analysis (3)**

An examination of advanced theories and practices in portfolio building and maintenance. Issues related to security price behavior are also examined. (Seminar) Pre: 601 or equivalent.

**633 Depository Institutions and Financial Management (3)**

Study of the financial decisions facing the management of depository institutions. Current financial practices and problems explored. Models for bank managers will be considered. (Lec. 3) Pre: 601 or equivalent.

**641 Advanced Financial Theory (3)**

Analysis of the theoretical framework for corporate decision making related to financial planning, capital budgeting decisions, dividend policy, and capital structure decisions. Emphasis on current research developments. (Seminar) Pre: 601 or equivalent.

**652 Advanced International Financial Management (3)**

Analysis of issues relevant to the international financial manager. The financial operations of multinational enterprises are examined through both the theoretical and the case approach. (Seminar) Pre: 601 or equivalent.

**671 Seminar in Finance (3)**

Independent research. Individual topics based on readings and research interests of the students. (Seminar) Pre: 601.

**691, 692 Directed Study in Finance (1–3 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**697 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent

developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

**French (FRN)**

*Section Head:* Professor Morello

**101 Beginning French I (3)**

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior French is required. Will not count toward the language requirement if the student has studied French for more than one year within the last six years. (F)

**102 Beginning French II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate French I (3)**

Development of facility in reading texts of moderate difficulty; supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate French II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**105 Basic Conversation (1)**

Practice in basic French conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for a maximum of 2 credits.

**201 French Pronunciation (1)**

The sounds of French; relationship between spelling and pronunciation; regional variation. Practice in pronouncing French prose and poetry. (Lab. 2) Pre: 104 or equivalent or permission of instructor.

**204 French Composition I (3)**

Practice in writing French; topics selected from everyday events and readings in French; emphasis on vocabulary building; some grammar study, frequent compositions. (Lec. 3) Pre: 104 or equivalent or permission of instructor.

**207 French Oral Expression I (3)**

Training in the spontaneous use of oral French. Students will extend the quantity and quality of spoken French that they are able to produce. Special focus on narration or story-telling in French. (Lec. 3) Pre: 104 or equivalent or permission of instructor.

**303 The French in North America (3)**

Surveys the background and current status of the French diaspora in North America, including Acadians, Quebecers, French Canadians, and French Americans, with special emphasis on the literary, artistic, and other contributions of these groups to the civilization(s) of the continent. Taught in French. (Lec. 3) Pre: 204 or 207 or permission of instructor.

**304 French Composition II (3)**

Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 204.

**307 Oral Expression II (3)**

Discussion, short speech making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. (Lec. 3) Pre: 207.

**309 French Culture and Literature to 1789 (3)**

Survey of the significant developments in the arts, society, and literature in France from the Middle Ages to the French Revolution. (Lec. 3) Pre: 204 or permission of instructor.

**310 Modern French Culture and Literature (3)**

Survey of the significant developments in the arts, history, and literature in France from the French revolution to the present. (Lec. 3) Pre: 204 or permission of instructor.

**315, 316 French Internship Abroad (3)**

Supervised work experience in a French-speaking country for advanced language students. (Practicum) Pre: 200-level French course or equivalent or permission of instructor.

**318 French Across the Curriculum (1)**

Reading and discussion of original French texts in conjunction with courses throughout the university curriculum. Designed to maintain and improve French language skills and to enrich study through exposure to texts in the original language. (Lec. 1) Pre: permission of instructor. May be repeated.

**320 Studies in French Cinema (3)**

Study of major French/Francophone film genres and of prominent French/Francophone directors. Emphasis will vary. (Lec. 3) Pre: 204 and 207 or permission of instructor. May be repeated with different topics.

**391 Literature to 1789 in Translation (3)**

Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) Not for major credit in French. (A)

**392 Nineteenth-Century Literature in Translation (3)**

Reading in translation of selected literary works from representative nineteenth-century authors. (Lec. 3) Not for major credit in French. (A) (F)

**393 Twentieth-Century Literature in Translation (3)**

Reading in translation of selected literary works from representative twentieth-century authors. (Lec. 3) Not for major credit in French. (A) (F)

**402 French Phonetics (3)**

Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 201 or permission of instructor.

**408 The French Language: Past, Present, and Future (3)**

Introduction to the history and present state of French. Study of standard and colloquial French, dialects, regional variations, language of youth and professions. Current tendencies; the Francophone movement. (Lec. 3) Pre: 304 or permission of instructor.

**412 Topics in French Culture and Literature (3)**

Topics in French literature and culture. (Lec. 3) Pre: 309 or 310 or permission of instructor. May be taken more than once for credit on different topics. Fall 2002: Molière. Spring 2003: France in the 1960's; Love and Adventure in 12th Century France.

**473 French Canadian Literature (3)**

Early historical and biographical works, but primarily the novel, poetry, and theatre of the 20th century. (Lec. 3) Pre: 309 or 310 or permission of instructor.

**474 African Literature in French (3)**

Authors of Africa and the Diaspora; includes Camara, Césaire, Dadie, Senghor. (Lec. 3) Pre: 309 or 310 or permission of instructor.

**480 Business French (3)**

Study of concepts and terminology relating to the French business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level French language course.

**497, 498 Directed Study (3 each)**

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of a project by a member and approval of section head.

**Genetics**

*Coordinator:* Associate Professor Mottinger

**Aquaculture and Fisheries Science**

476 The Genetics of Fish

**Biochemistry**

342 Human Genetics and Human Affairs

452 Advanced Topics in Genetics

**Biological Sciences**

203 Introduction to Evolutionary Genetics

352 Genetics

454 Genetics Laboratory

554 Cytogenetics

573 Developmental Genetics

579 Advanced Genetics Seminar

**Microbiology**

502 Techniques of Molecular Biology

552 Microbial Genetics

561 Recent Advances in Molecular Cloning

**Plant Sciences**

250 Plant Breeding and Genetics

352 General Genetics

355 Genetics Laboratory

472 Plant Improvement II

**Geography (GEG)**

*Chairperson:* Professor Juda

**101 World Geography (3)**

An examination of major world regions. Basic geographic concepts are presented. Physiographic, political, economic, social, and cultural influences are addressed in a spatial context. (Lec. 3) (S)

**104 Political Geography (3)**

Pattern of political units throughout the world; special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. (Lec. 3) (S)

**200 The Geography of Human Ecosystems (3)**

The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of man-earth-space-resource relationships. (Lec. 3) (S)

**203 Economic Geography (3)**

Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. (Lec. 3)

**350 (or MAF 350) Caribbean Geography (3)**

Exploration of the physical, political, economic, and cultural environment of the Caribbean region, with emphasis on small island states from the colonial era to the present. (Lec. 3)

**511 Geography for Life: Educational Strategies (3)**

Knowledge of geography and its importance for effective citizenship. Classroom teachers integrate geographic concepts for lesson plan development using National Geographic Standards and other source materials. (Lec. 3)

**Geosciences (GEO)**

*Chairperson:* Professor Murray

**100 Environmental Geology (3)**

Geologic processes, how they affect people and vice versa; geologic hazards, earthquake impact, shoreline development, offshore oil, waste disposal, water, energy and other resources, climate change. (Lec. 3) (N)

**101 Freshman Inquiry into the Geosciences (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Geosciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**102 Evolution and Extinction of the Dinosaurs (3)**

General introduction to the dinosaurs. Variety, habits, warm-bloodedness, and extinction discussed. Pterosaurs and bird origins presented. (Lec. 3) (N)

**103 Understanding the Earth (4)**

Processes operating within and upon the earth. Relationship of plate tectonics to volcanism, earthquakes, and mountain building. Development and modification of landscapes by rivers, glaciers, wind, waves, and ground water. Environmental implications of geologic processes. (Lec. 3, Lab. 2) (N)

**107 Geological Field Trips (1)**

Field trips to coastal, glacial, and bedrock terrains. The relation of structures and materials to the history of the earth, mineral resources, and our environment. (Lab. 2) In alternate years. Next offered 2003–04.

**110 The Ocean Planet**

See Oceanography 110.

**120 Geology of U.S. National Parks (3)**

Selected parks are used to illustrate geologic processes and age relationships to understand earth history. Includes plate tectonics, volcanic and plutonic activity, glaciation, cave formation, stream and coastal processes, landscape formation. (Lec. 3) (N)

**203 Field Geology (3)**

Emphasis on the development of skills in geologic mapping and the construction of geologic maps. Field trips required. (Lec. 2, Lab. 3) Pre: 100, 103, or permission of instructor.

**210 Landforms: Origin and Evolution (4)**

Development, distribution, and geologic significance of landforms produced by rivers, glaciers, coastal processes, weathering, and other geomorphic agents. Interpretation of landforms through field studies, topographic maps, and aerial photographs. (Lec. 3, Lab. 2) Pre: 103 or permission of instructor.

**240 Prehistoric Life (4)**

The history of life, from its origins to the first multicellular animals, to humans. Special emphasis on the origin of fishes, birds, mammals, and humans. (Lec. 3, Lab. 2) Pre: 102 or 103 or BIO 104B or 113 or 101 or permission of the instructor. Offered in even-numbered years.

**277 Coastal Geologic Environments (3)**

Geologic processes in coastal environments such as barriers, lagoons, estuaries, bays, and rocky headlands; impact of coastal geologic hazards such as hurricanes, winter storms, and sea-level rise. Response of people to hazards. Field trips, small-group project required. (Lec. 3) Pre: 103.

**301 Earth's Depleting Resources (3)**

Origin, distribution, extraction, and importance of various non-renewable resources: energy sources, metals, building and industrial materials, water. Strategic materials, their world distribution and role in world affairs. (Lec. 3) Pre: 103 or permission of instructor.

**320 Earth Materials (4)**

Hand-sample identification and characterization of minerals and rocks, including crystallography, composition, classification, origin, and relationship to geological occurrence; also includes aspects of soil-forming minerals, ore deposits, and other mineral resources. (Lec. 3, Lab. 2) Pre: 103, credit or concurrent enrollment in CHM 101 or 103.

**321 Rocks and Geologic Processes (4)**

The study of igneous and metamorphic processes related to plate tectonics, and the interpretation of Earth history and events from features preserved in rocks. Application of the polarizing microscope to the study of rocks in thin section, combined with geochemical and phase equilibria approaches. Introduction to computer modeling of igneous and metamorphic processes. (Lec. 3, Lab. 2) Pre: 320.

**350 Evolution**

See Biological Sciences 350.

**370 Structure of the Earth (4)**

Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. (Lec. 3, Lab. 2) Pre: PHY 213 and 285 or 111 and 185 or permission of instructor.

**421 Geochemistry (3)**

Introduction to thermodynamics of rock and minerals, stable isotopes, geochronology, and cosmochemistry. Emphasis on the geochemistry of igneous and metamorphic rocks. (Lec. 3) Pre: CHM 112, GEL 321, and MTH 132 or 142, or permission of instructor.

**450 Introduction to Sedimentary Geology (4)**

Principles underlying formation and composition of lithofacies and sedimentary environments. Methods, procedures, and techniques used to study sedimentary processes, depositional environments, sediment and rock sequences, and paleogeography. (Lec. 3, Lab. 2) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**465 Introduction to Geophysics (3)**

Physical properties of earth and the application of geophysical methods to explore the earth's interior for natural resources. Introductory interpretation of gravity, magnetic, seismic, and radiometric surveys. (Lec. 2, Lab. 2) Pre: 103, PHY 112, MTH 132.

**468 Ground-Water Chemistry (4)**

Introduction to the chemical processes controlling water chemistry in low-temperature environments. Chemical weathering, ion exchange, redox, mineral equilibrium, isotopes, and chemical modeling of aqueous systems. (Lec. 3, Lab. 2) Pre: CHM 101, 102, 112, 114; GEO 103, 320. Offered in odd-numbered years. Next offered fall 2003.

**480 Summer Field Camp (4-8)**

Geologic field mapping and principles. (Practicum) Pre: 210, 240, 321, 370, 450 recommended. Course not offered through URI; prior approval of selected camp required by the Department of Geology. Recommended between junior and senior years. Not for graduate credit in geology.

**482 (or NRS 482 or EVS 482) Innovative Sub-surface Remediation Technologies (4)**

Innovative remediation technologies for treating contaminated groundwater and sediments: theory, applications, and limitations of selected methods. Discussion of case studies. (Lec. 4) Pre: Permission of instructor. In alternate years. Not for graduate credit.

**483 Hydrogeology (4)**

Study and interpretation of ground-water flow systems and the interaction between ground-water and the geologic framework, including: ground-water flow, aqueous geochemistry, ground-water resource evaluation, and ground-water in geologic processes. (Lec. 3, Lab. 2) Pre: 103, 210, and MTH 131 or 141, or permission of instructor.

**484 (or NRS 484 or EVS 484) Environmental Hydrogeology (4)**

physico-chemical principles and fundamental relationships that describe the fate and transport of contaminants in the hydrologic system. (Lec. 3, Lab. 2) Pre: 483 or CVE 588 or NRS 510, or permission of instructor. Not for graduate credit. Offered every other year.

**485 (or CVE 485) Environmental Engineering Geophysics (3)**

Field and lab methods of determining physical rock constants such as density, porosity, permeability, electrical conductivity, and seismic velocity, with applications in geology and environmental engineering. (Lec. 2, Lab. 2) Pre: 103, MTH 132 or 142, PHY 111 and 185 or 213 and 285, and junior standing, or permission of instructor. In alternate years.

**488 Geological Evolution of North America (4)**

The evolution of the major sedimentary basins in North America is presented within a tectonic framework. Regional paleoenvironments and paleogeography through time are reconstructed from faunas and facies. Ten-day field trip. (Lec. 3, Lab. 2) Pre: 450 or permission of instructor.

**491 Special Topics (1-3)**

Advanced work for undergraduates under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Not for graduate credit in geology.

**499 Senior Thesis (3)**

Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. (Independent Study) Pre: senior standing and permission of instructor. Not for graduate credit in geology.

**515 Glacial Geology (3)**

Investigation of glacial environments and processes including areas with presently existing glaciers. Emphasis on the development of glacial landscapes and deposits. Field trips in New England area. (Lec. 2, Lab. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**530 Petrogenetic Igneous Processes (4)**

Examination of key physico-chemical processes responsible for the diversity of igneous rocks and igneous activity. Emphasis on geochemistry, petrography, field relationships, and tectonic setting. (Lec. 3, Lab. 2) Pre: 321 or permission of instructor. In alternate years. Next offered spring 2003.

**531 Metamorphic Petrology (3)**

Facies concept and other methods of interpreting metamorphic mineral assemblages. Chemical and fabric changes during metamorphism, including principles of structural petrology. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. In alternate years. Next offered spring 2003.

**550 Sedimentary Processes and Environments (3)**

Physical processes of sedimentation with emphasis on river, shoreline, estuarine, and lagoon environments. Emphasis on field study including 9-day field trip. (Lec. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major. Offered in spring of odd-numbered years.

**554 Sedimentary Petrology (3)**

The detailed interpretation of siliciclastic and carbonate fabrics and textures in thin section and hand sample. Emphasizes aspects of diagenesis, including cementation, replacement, recrystallization, pedogenesis, and porosity evolution. Skeletal elements and paleoenvironmental context presented. (Lec. 3) Pre: 240 and 450 or permission of instructor. In alternate years.

**565 Geophysical Models (3)**

Model interpretation of gravity, magnetic, and geoelectric field surveys with geologic constraints. Conversion of quantitative geophysical models into geologic/hydrologic structures. (Lec. 2, Lab. 2) Pre: MTH 132, PHY 112 or equivalent. Offered in spring of odd-numbered years.

**568 Isotopes in Hydrogeology (3)**

Use of environmental isotopes in groundwater studies; dating groundwater, delineating flow paths and identifying recharge areas; geochemical evolution of groundwater and assessment of contamination. (Lec. 3) Pre: 483 and 468 or permission of instructor. Offered in even-numbered years.

**577 Coastal Geologic Hazards (3)**

Geologic hazards in the coastal zone and their impact on people. Includes waves, storm-surge, mass-wasting, and sea-level rise. Geologic effectiveness of engineering structures and management techniques. Emphasis on field study. (Lec. 2, Lab. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**580 New England Geology (3)**

Review of the bedrock geology of New England, and its applications for the Appalachian/Caledonides mountain chain and theories of orogenesis. Mandatory field trips. (Lec. 3) Pre: 321, 370, or permission of instructor. Offered in fall of odd-numbered years.

**581 Topics in Tectonic Geology (3)**

Review of selected topics in continental and oceanic tectonics. (Seminar) Pre: permission of instructor. Offered in fall of even-numbered years.

**582 (or NRS 583, or EVS 582) Innovative**

Subsurface Remediation Technologies (4)  
Innovative remediation technologies for treating contaminated groundwater and sediments: theory, applications, and limitations of selected methods. Discussion of case studies. Offered alternate years (Lec. 4) Pre: permission of instructor.

**583 Ground-Water Modeling (3)**

Numerical modeling of ground-water flow and solute transport. Numerical methods, model conceptualization, assumptions, boundary conditions, and complex aquifer systems. Modeling exercises including full-scale modeling project using MODFLOW. (Lec. 2, Lab. 3) Pre: 483, or NRS 461 or CVE 588, or permission of instructor. Offered in odd-numbered years.

**584 (or NRS 584, or EVS 584) Environmental Hydrogeology (4)**

Develop an understanding of the physico-chemical principles and fundamental relationships that describe the fate and transport of contaminants in the hydrologic system. (Lec. 3, Lab 2) Pre: 483 or CVE 588 or NRS 510 or permission of instructor.

**590, 591 Special Problems (1–3 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. S/U credit for 591.

**601 (or EVS 601) Environmental Sciences Seminar (1)**

Guest speakers present the results of research in the field of environmental sciences with special focus on hydrologic environments. (Seminar)

**930 Workshop in Geology Topics for Teachers (0–3 each)**

Especially designed for teachers of physical sciences. Basic topics of geology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

*Note: For other related courses, see OCG 540, 625, 628, 643, 644, 645, 646, 649, 651, 652, 678, 681; OCE 582, 688; and CVE 581, 585, 587, 588, 677, 681, 682, 687.*

**German (GER)**

*Section Head:* Associate Professor Hedderich

**101 Beginning German I (3)**

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior German is required. Will not count toward the language requirement if the student has studied German for more than one year within the last six years. (F)

**102 Beginning German II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate German I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate German II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**105, 106 Basic Conversation I, II (1 each)**

105: Practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 104.

**111, 112 Intensive Beginning German (4 each)**

Study of the fundamentals of German with special emphasis on listening and speaking skills. (Lec. 4) Pre: 111 or equivalent for 112. Not for major credit in German.

**113, 114 Intensive Intermediate German (4 each)**

Practice in listening and speaking. Development of basic reading and writing skills. Review of grammatical structure. (Lec. 4) Pre: 112 or equivalent for 113; 113 or equivalent for 114.

**201, 202 Intermediate Conversation I, II (1 each)**

Conversation skills for students who have completed intermediate German. 202: Continuation of 201. (Lec. 3) Pre: 104 or permission of instructor.

**205, 206 Conversation and Composition (3 each)**

Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. (Lec. 3) Pre: 104 or equivalent.

**215, 216 Advanced Conversational German (4 each)**

Intensive practice in speaking and listening, with some attention to writing skills. (Lec. 4) Pre: 114 or equivalent.

**221 Introduction to Business German (1)**

Conversational practice in German with emphasis on the acquisition of vocabulary pertinent to international business. (Lec. 1) Pre: 112 or equivalent.

**305 Advanced Conversation (3)**

Intensive practice in spoken German based on matters of current interest in German-speaking countries. (Lec. 3) Pre: 206 or equivalent. In alternate years.

**306 Advanced Composition (3)**

Training in various forms of writing by means of frequent compositions and critiques. (Lec. 3) Pre: 206 or equivalent. In alternate years.

**315, 316 Language Study Abroad (3–5 each)**

Credit for advanced language study in a German-speaking country. (Practicum) Pre: 206 or equivalent and permission of section head.

**327 Introduction to German Studies and Literature (3)**

Major developments and figures in German culture, literature, art, and society of the twentieth century. (Lec. 3) Pre: 206 or permission of instructor.

**328 Introduction to German Cultural History and Literature (3)**

Overview of major German cultural developments starting with the "Germany" of the Romans and ending with unification. Significant figures and developments in literature, art, and society. (Lec. 3) Pre: 206 (or equivalent) or permission of instructor.

**392 Masterpieces of German Literature (3)**

Literary works in English translation from 1800 to the present. (Lec. 3) Not for major credit in German. (A) (F)

**408 (or LIN 408) The German Language: Past and Present (3)**

Introduction to the history and present state of the German languages. Study of standard and colloquial German, dialects, Swiss and Austrian variations, language of youth and professions. Analysis of various test types. Tendencies in present-day German. (Lec. 3) Pre: 305 or permission of instructor. Not for graduate credit.

**411 Advanced Technical German**

See Engineering 411.

**421 Business German (3)**

Study of the concepts and terminology of the German language common to the realm of international business. Intended for advanced students of business and German. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in 305 and 306. Next offered fall 2002.

**485, 486 Special Studies (1–3 each)**

Special topics in German literature not emphasized in other courses. (Seminar) Pre: one semester of German at the 300 level or permission of section head. May be repeated with a change in topic. In alternate years. Next offered 2002–03.

**497, 498 Directed Study (1–3 each)**

Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a member and permission of section head.

**585, 586 Seminar in German Studies (1–3 each)**

Topics in German literature and civilization. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topics.

**598 Directed Studies (1–3)**

Individual research on problems of special interest. (Independent Study) Pre: graduate

standing, acceptance of project by a member, and permission of chairperson. May be repeated with different topics.

**987, 988 German Play Production (1 each)**

Study and production of a German play or plays. (Workshop) Pre: 215 and 216 or equivalent. Students may enroll concurrently in 485, 486. S/U only.

**Gerontology**

*Director:* Professor P. Clark

**Dental Hygiene**

462 Oral Care of the Aged and Medically Compromised

**Exercise Science**

563 Fitness Programs for the Middle-Aged and Elderly

564 Physiology of Aging

**Human Development and Family Studies**

312 Adult Development

314 Introduction to Gerontology

315 Early Field Experience with Aging

421 Death, Dying, and Bereavement

431 Family and the Elderly

440 Environmental Context of Aging

513 Seminar in Adult Development

514 Seminar in Older Adulthood

527 Health Care Policy and the Elderly

555 Gerontological Counseling

**Human Science and Services**

530 Multidisciplinary Health Seminars for the Elderly

**Nursing**

349 Aging and Health

**Nutrition and Food Science**

395 Nutrition in the Life Cycle II

**Physical Education and Exercise Science**

416 Aging and Leisure

**Sociology**

438 Aging in Society

**Greek (GRK)**

*Section Head:* Associate Professor Suter

*For Modern Greek, see LAN 191, 192.*

**101 Ancient Greek I (3)**

Grammar and syntax of Attic Greek, reading practice. (Lec. 3) Pre: no previous Greek is required. Will not count toward the language requirement if the student has studied Greek for more than one year within the last six years. (F)

**102 Ancient Greek II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**301 Intermediate Greek I (3)**

Grammar review; readings such as Lysias' Against Eratosthenes. (Lec. 3) Pre: 102 or equivalent. (F)

**302 Intermediate Greek II (3)**

Readings selected in accordance with interests of students. (Lec. 3) Pre: 301 or permission of instructor. May be repeated for credit with a different topic. (F)

**310 Greek Across the Curriculum (1)**

Reading of original Greek texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich the study of different subjects by texts in the original language. (Lec. 1) Pre: 301 or permission of instructor.

**497, 498 Directed Study (1–6 each)**

Individual readings and research. (Independent Study) Pre: acceptance of project by member and approval of chairperson. May be repeated for credit with a different topic.

**Health Services Administration (HSA)**

*Coordinator:* A. Hubbard

**360 Health Services Administration (3)**

Introduction to key concepts and principles in health services administration through both didactic and experiential means. (Seminar) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 60 credits.

**380 Introductory Practicum in Health Services Administration (3)**

Didactic and experiential introduction to the delivery of health services including acute care, long-term care, nursing homes, and special services problems such as hepatitis, tuberculosis, and HIV. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 75 credits.

**480 Advanced Practicum in Health Services Administration (6)**

An intensive experience in a health care setting selected by the student, combined with class meetings. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 90 credits. Not for graduate credit.

**Hebrew (HBW)**

*Chairperson:* Professor Morello

**101 Beginning Hebrew I (3)**

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Hebrew is required. Will not count toward the language requirement if the student has studied Hebrew for more than one year within the last six years. (F)

**102 Beginning Hebrew II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate Hebrew I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate Hebrew II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**History (HIS)**

*Chairperson:* Associate Professor Honhart

**111 History of Ancient Greece and Rome (3)**

From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic, and aesthetic developments. Includes rise of the Christian church. (Lec. 3) (F) (L)

**112 History of Medieval Europe (3)**

Primarily western Europe. Continuation of 111. Medieval church, feudalism, revival of town life, commerce, industry, and money economy, rise of national states, and development in the arts. (Lec. 3) (F) (L)

**113 History of Western Civilization from the Late Middle Ages to 1789 (3)**

Introductory course treating Western civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. (Lec. 3) (F) (L)

**114 History of Western Civilization Since 1789 (3)**

Continuation of 113. Western civilization of the present time. (Lec. 3) (F) (L)

**116 History of Western Science (3)**

Development of western science from ancient Greece and Rome until the present. Topics include relations of science and religion, emergence of science-based industry, and interaction between science and politics, especially during war. (Lec. 3). (L)

**117 History of Medicine (3)**

Professionalization of medicine, status of healers in different cultures, creation of scientific medicine, alternative medical practice, effect of changing disease patterns on medical theory/practice. Focus on the U.S. in the 19th and 20th centuries. (Lec. 3) (L)

**118 Women in European History (3)**

Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on nineteenth and twentieth centuries with background material from earlier periods. (Lec. 3) (L)

**123 Modern British Civilization (3)**

An introduction to British culture in the 19th and 20th centuries. Surveys of the impact of the Industrial Revolution, political developments, and social change; also Britain's role in the world, Ireland, and the world wars. (Lec. 3) (F) (L)

**130 History and the Sea (3)**

The history of seafaring from ancient times to the 20th century. The course considers the political, military, economic, and social history of the maritime world. (Lec. 3) (L)

**132 Introduction to Russian and Soviet History (3)**

Selected topics in the development of Russian civilization since the ninth century. (Lec. 3) (F) (L)

**141 History of the United States to 1877 (3)**

Colonial and Revolutionary periods, and economic, social, and political development of the United States through the Civil War and Reconstruction. (Lec. 2, Rec. 1) (L)

**142 History of the United States Since 1877 (3)**

General social, economic, and political development from 1877 to the present. (Lec. 2, Rec. 1) (L)

**145 Women in the North American Colonies and the United States, 1500–1890 (3)**

Legacies of Native-American, Hispanic, and Anglo-American culture; slavery and abolition; women's work and sexuality; women's rights movements; ethnic and regional diversity, with emphasis on women in the West, the South, and Northeast. (Lec. 3) (L)

**146 Women in the United States, 1890–Present (3)**

Impact of immigration and industrialization; legacy of slavery and segregation; changes in sexuality, reproduction, and work; images of women in popular culture; women's political movements. (Lec. 3) (L)

**150 (or AAF 150) Introduction to Afro-American History (3)**

Survey of Afro-American history from African origins to the current racial confrontation. (Lec. 3) (L)

**160 Technology and American Life: 1800–Present (3)**

Surveys the development and social impact of technology on American life during the past two centuries. (Lec. 3) 160 (L)

**171 East Asian Culture and History (3)**

Introduction to the culture and history of East Asia. Emphasis on the literary, artistic, and philosophical traditions of East Asia, especially those aspects which relate to and influence contemporary developments. (Lec. 3) (F) (L)

**172 Southeast Asian Culture and History (3)**

Broad overview of the culture and history of Southeast Asia. Emphasis on society, culture, and religion

and their influence on contemporary developments. (Lec. 3) (F) (L)

**177 The Islamic Middle East: From the Mongols to Modern Times (3)**

History of the Islamic Middle East from the Mongol invasions of the 13th century to the present. Includes the Ottoman Empire, the impact of European colonialism, the rise of nationalism, the Arab-Israeli conflict, and the Iranian revolution. (Lec. 3) (F) (L)

**180 Introduction to Latin American Civilization (3)**

Social, cultural, and political history of the Latin American region from the preconquest era to the present time. (Lec. 3) (F) (L)

**300 Ancient Greece: Hellenic and Hellenistic Period from the Trojan Wars to Alexander the Great, 800 B.C.–300 B.C. (3)**

Social, economic, political and intellectual development of Greece from the Archaic to Hellenistic period. (Lec. 3) Pre: 111 or GRK 110 or permission of instructor. (F)

**303 From Republic to Empire: Ancient Rome (3)**

Social, economic, political, and intellectual history of Ancient Rome, covering the foundation of the city, the Roman Republic and Empire, and the spread of Christianity. From about 750 B.C. to about 300 A.D. (Lec. 3) Pre: 111 or 112 or permission of instructor. (F)

**304 Western Europe in the High Middle Ages (3)**

Primarily France and England in the 12th and 13th centuries. Emphasis on the Medieval Gothic-Catholic culture, the rise of towns, and the development of a money economy. (Lec. 3) (F) (L)

**305 The Renaissance (3)**

Europe in transition during the 14th through the early 16th centuries. The economic, social, and religious backgrounds of the Renaissance. Emphasis on culture and artistic developments. (Lec. 3) (F) (L)

**306 The Protestant and Catholic Reformation I (3)**

Change of European society resulting from the Protestant Reformation and Catholic Reaction; rise of secular states and emerging national states; effects of religious crises upon culture and society. (Lec. 3) (F) (L)

**307 The Protestant and Catholic Reformation II (3)**

Catholic and Counter Reformation, Northern Renaissance, wars of religion, social and cultural manifestations of the early Baroque. (Lec. 3) (F) (L)

**308 Between Eve and Mary: Women in the Middle Ages (3)**

History of women in western Europe from about 500 A.D. to about 1500 A.D. Understanding the variety of medieval women's experiences (rich or poor, secular or religious, urban or rural) and how women were perceived by their society. (Lec. 3)

**309 The French Revolution and Napoleon (3)**

Examination of the Revolution and Napoleonic eras with emphasis on the connections among economic, social, and political developments. Special attention to problems in interpretation. (Lec. 3) Pre: junior standing. (L)

**310 History of Europe: 1815–1914 (3)**

Major political, economic, and intellectual developments in Europe from the defeat of Napoleon I to the outbreak of World War I; emphasis on the Revolutions of 1848, unification of Italy and Germany, impact of the Industrial Revolution, nationalism and imperialism, background of World War I. (Lec. 3) Pre: junior standing. (F) (L)

**311 History of Europe Since 1914 (3)**

Detailed study of developments from 1914 to present: wars, postwar adjustments, communist and fascist ideologies, history of individual states, and social and intellectual trends. (Lec. 3) Pre: junior standing. (F) (L)

**314 Seventeenth- and Eighteenth-Century European Cultural History (3)**

Intellectual and social movements of the Age of Reason and the Age of Enlightenment. (Lec. 3) (F) (L)

**323 History of England: 1815–1896 (3)**

Impact of industrialization and urbanization on political, economic, religious, and cultural forces in the Victorian age. (Lec. 3) (L)

**327 German History Since 1914 (3)**

The collapse of Germany's social and political order between 1914 and 1945 and the subsequent creation of antagonistic liberal and socialist societies in West and East Germany. Emphasis on national socialism. (Lec. 3) (F) (L)

**328 The Holocaust (3)**

Study of Nazi efforts to exterminate Jews and others in Europe. Focuses on Nazi programs and policies; Jewish experiences; and the responses of the outside world. (Lec. 3) Pre: junior standing. (L)

**332 History of Imperial Russia (3)**

Russian society, politics, and world view from the modernizing reforms of Peter the Great to the installation of parliamentary government in 1905. Emphasis on student writing, analysis of documents, trends, interconnections. (Lec. 3) (F) (L)

**333 History of the Soviet Union (3)**

From industrialization and regrouping in the 1890s, an examination of the new political and economic system that emerged from revolutions and civil war. Literature studied as forum for debate about the just society. Regular informal writing. (Lec. 3) (F) (L)

**335 American Colonial History to 1763 (3)**

American history from the founding of the colonies to the end of the French and Indian War, including developments within the colonies as well as their relationship with England. (Lec. 3) Pre: 141 or equivalent.

**336 The American Revolution and****Confederation: 1763–1789 (3)**

Social, political, and economic aspects of the Revolution and Confederation periods. (Lec. 3) Pre: 141 or permission of instructor.

**337 Creation of the Union: America from 1789–1848 (3)**

The development of the new nation through the Jacksonian years, with emphasis on the transformation of society and politics. (Lec. 3)

**339 Emergence of Industrial America: 1877–1914 (3)**

Growth and consolidation of business, urbanization, and the Populist and Progressive movements. America's emergence as a world power. (Lec. 3) Pre: 142 or permission of instructor.

**340 United States History from 1914 to 1941 (3)**

Social, political and economic developments in the U.S. from the onset of WW I through the end of the Great Depression. (Lec. 3) (L)

**341 United States History from 1941 to 1974 (3)**

U.S. Involvement in WW II. Social, political and economic developments in the postwar era. Equal emphasis on the domestic sphere and America's role in world affairs. (Lec. 3) (L)

**344 History of the North American Indian (3)**

Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. (Lec. 3) (F)

**346 Immigration, Ethnicity and Race in America (3)**

History of immigration to the U.S. from the colonial period to the present, with emphasis on the 19th and 20th centuries. Compares different waves, explores shifting attitudes toward immigrants, and discusses how race and ethnicity shaped immigrants' experiences. (Lec. 3) (L)

**349 History of American Labor (3)**

Changes in work, lifestyle, and political consciousness of American workers in the 19th and 20th centuries; conflicts between labor and capital, and relationship to emergence of labor movements. (Lec. 3)

**350 Family Matters: History of Family Life in the United States (3)**

The experiences of America's families from European settlement to the present. Emphasis how family life has varied over time, from place to place, and among different ethnic and social groups and

according to gender. (Lec. 3) Pre: junior standing or permission of instructor.

**351 History of Women in Medicine (3)**

Examines the history of women healers, including midwives, nurses, and physicians. Topics in women's healthcare, especially concerning reproduction and childbirth, will also be addressed. (Lec. 3) Pre: junior standing or permission of the instructor.

**352 Topics in the History of Women and Gender (3)**

Themes in women's history, sexual identities, and the construction of gender roles. Primarily deals with United States since 1800. (Lec. 3) Pre: junior standing or permission of instructor. May be repeated.

**353 United States Diplomatic History to 1914 (3)**

Analysis of the people, ideas, and institutions which shaped the rise of the United States from thirteen colonies to the most powerful nation in the world. (Lec. 3) (L)

**354 United States Diplomacy in the Twentieth Century (3)**

Analysis of people, ideas, and institutions which have shaped American relations with the rest of the world from World War I to the present. (Lec. 3) (L)

**357 History of Religion in the United States (3)**

Background, emergence of evangelical Protestant synthesis, disintegration of this synthesis, and development of a pluralistic religious community in modern America. (Lec. 3)

**358 Recent America in Film (3)**

An investigation of American culture and history since 1930 using films as the major resource for study, with emphasis on the Great Depression, World War II, sexual interaction, and race relations. (Lec. 1, Lab. 4)

**359 (or AAF 359) History of Slavery in America (3)**

Origins, development, and demise of slavery, with emphasis on the area that currently constitutes the United States. (Lec. 3)

**360 American Culture 1865–1940 (3)**

Explores the nature and sources of American culture with emphasis on the diversity of its origins and forms of expression. (Lec. 3) (L)

**362 History of Rhode Island (3)**

History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. (Lec. 3) Pre: 141 and 142.

**365 Civil War and Reconstruction (3)**

American history during the period 1850–1877, giving equal emphasis to the background of the



Civil War, the war itself, and the social, political, and economic aspects of Reconstruction. (Lec. 3)

**366 (or AAF 366) Black Political Thought During the Age of Civil Rights and Black Power (3)**

Examines black social and political thought during the Civil Rights and Black Power eras. (Lec. 3) Pre: Junior standing or permission of instructor.

**367 (or AAF 367) Contemporary African-American Political Thought (3)**

Examines the contradictions of American social and public policy over the past quarter-century and analyzes black responses to a shifting domestic and international terrain. (Lec. 3) Pre: Junior standing or permission of instructor.

**374 History of Modern China (3)**

Political, social, economic, and cultural development of China since 1800 with emphasis on the development of Chinese nationalism and on the rise, theory, and practice of Chinese communism. (Lec. 3) (F)

**375 History of Modern Japan (3)**

Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire, and the emergence of the "New Japan." (Lec. 3) (F)

**376 Women in Muslim Societies (3)**

Examines gender relations in the modern Middle East through novels, poetry, and oral histories, as well as through historical and anthropological studies. (Lec. 3) (F) (L)

**377 Revolution in Islam (3)**

Examines the history of revolutionary ideology in Islamic thought and places modern revolutions—such as the Iranian revolution of 1978—within a broader context of both Sunni and Shi'i radical activism. (Lec. 3) (F) (L)

**378 Arab-Israeli Conflict (3)**

An examination of the roots of Arab nationalism and modern political Zionism; conflict between the World Wars; the creation of the state of Israel and the causes of continuing conflict since its creation. (Lec. 3) (F)

**381 History of Colonial Latin America (3)**

The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. (Lec. 3) (F) (L)

**382 History of Modern Latin America (3)**

Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform, and revolution in Latin America since 1810. (Lec. 3) (F) (L)

**384 The Caribbean: New World/Third World (3)**

Historical and contemporary development of the Caribbean world, emphasizing efforts by the regions' peoples to achieve political, economic, and cultural independence from external domination. (Lec. 3) (F) (L)

**385 Revolution and Unrest in Central America and the Caribbean (3)**

Historical origins of social unrest in Central America and the Spanish-speaking Caribbean. Cuban and Nicaraguan revolutions, civil conflict in Guatemala and El Salvador, U.S. policy. (Lec. 3) Pre: 180, 381, or 382 are recommended, but are not prerequisites. (F)

**388 (or AAF 388) History of Sub-Saharan Africa (3)**

Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition and the rise of African nationalism. (Lec. 3) Pre: junior standing. (F)

**389 Exploration, Commerce and Conflict in the Atlantic World, 1415–1815 (3)**

The Atlantic world from the 15th to early 19th centuries. Voyages of exploration, cultural contact, Atlantic economy, piracy, smuggling, fishing, naval warfare, imperialism, migration, and life at sea in the Age of Sail. (Lec. 3)

**390 The Atlantic World in the Age of Iron, Steam, and Steel (3)**

The Atlantic world in the 19th and early 20th centuries. Maritime technology, seaborne commerce, naval warfare, imperialism, migration, whaling, the slave trade, piracy, and life at sea. (Lec. 3)

**391 Directed Study or Research (3)**

Special work arranged to meet the needs of individual students who desire advanced work. (Independent Study) Pre: permission of chairperson. May be repeated for a total of 6 credits with permission of instructor and chairperson.

**393 Topics in History (1–3)**

Subject, course content, and years offered will vary according to expertise and availability of instructors. (Lec. 1–3) May be repeated for credit with permission of chairperson.

**396 Maritime History and Underwater Archaeology Field School (3)**

Usually, but not exclusively taught in Bermuda. Students may select an archaeological diving option, an archaeological non-diving option, or an archival research option. Pre: junior standing and those students who select the archaeological diving option will be required to go through the URI research diving certification process prior to departure.

**397 The Historical Landscape of Britain (3)**

Taught in England. Examines the impact of political, military, religious, economic, and social change in the past six or seven centuries on the landscape of village and field and town and country. (Lec. 2, Lab. 3) Usually taught in conjunction with ENG 397. (F)

**398 History Through Science Fiction (3)**

Ideas about history in popular culture as seen in the literary genre of science fiction. (Lec. 3) (L)

**401 Advanced Topics in European History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**441 Advanced Topics in American History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**481 Advanced Topics in Asian or Latin American History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**495 Seminar in History (3)**

Development of skills in historical research and writing and in the critical analysis of historical works. Topics vary. (Seminar) Pre: completion of 401, 441, or 481, with the same instructor, or permission of the department. This course is required of undergraduate history majors. May be repeated for credit with different topic with permission of instructor.

**502, 503 Special Readings in European History (3 each)**

Intensive tutorial work, research, and readings in European history. (Independent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated.

**506 Seminar in European History (3)**

Selected topics in European history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation.

(Seminar) Pre: graduate standing or permission of instructor.

### **507 Seminar in United States History (3)**

Selected topics in United States history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor.

### **508 Seminar in Asian or Latin American History (3)**

Selected topics in Asian or Latin American history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor.

### **536, 537 Special Readings in American History (3 each)**

Intensive tutorial work, research, and readings in American history. (Independent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated.

### **544 Colloquium in Worker History**

See Labor and Industrial Relations 544.

### **588, 589 Special Readings in Asian or Latin American History (3 each)**

Intensive tutorial work, research, and readings in Asian or Latin American history. (Independent Study) Pre: graduate standing and permission of instructor. Concurrent audit of parallel 300-level course required. May be repeated.

### **591 Directed Study or Research (3)**

Directed readings, research, or study designed to meet the particular needs of individuals or small groups of graduate students. (Independent Study)

### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Honors Program (HPR)**

*Director:* Professor G. Johnson

*Honors courses (HPR) are open only to eligible students. See page 41 of this catalog or the Honors Program brochure for requirements. Sections of honors courses that have been approved for general education credit are marked.*

### **101 Analytical Thinking in the Humanities (3)**

Identification and comparison of analytical and critical methods employed by humanistic disciplines. Practice in their application. (Seminar) (A)

### **102 Analytical Thinking in the Social Sciences (3)**

Identification and comparison of the analytical and critical methods employed in the social sciences. Practice in their application. (Seminar) (S)

### **103 Analytical Thinking in the Natural Sciences (3)**

General themes in science as the basis for studying the "scientific method" and methods of analytical thinking common to problem solving in the sciences. (Seminar) Fall 2002: The Science of Exploration. (N). Spring 2003: Thinking and Working Like a Scientist. (N) Professor Heppner's section is Writing Intensive [WI].

### **104 Analytical Thinking in Letters (3)**

Identification and comparison of analytical and critical methods employed by historians and philosophers. Practice in their application. (Seminar) (L)

### **105 Honors Study in Fine Arts and Literature (3)**

Exploration of themes, topics, and techniques in the fine arts and in literature. (Seminar) Fall 2002: Visions of the Future in Books and Films (A). Spring 2003: Understanding the Feature Film. (A)

### **106 Honors Study in Foreign Language and Culture (3)**

Exploration of themes and topics relating to foreign languages and cultures. (Seminar) (F)

### **107 Honors Study in Letters (3)**

Exploration of themes and topics in the field of letters. (Seminar) Fall 2002: Spain, the Jews, and the Inquisition (L). Spring 2003: Introduction to Philosophy (L)

### **108 Honors Study in Mathematics (3)**

Exploration of topics and creative use of problem solving in mathematics. (Seminar) Fall 2002: Technology and Social Issues of the Internet. (M)

### **109 Honors Study in Natural Sciences (3)**

Exploration of themes and topics in the natural sciences. (Seminar) Fall 2002: Biology for the Citizen (N); Inquiry in Soil Science (N).

### **110 Honors Study in Social Sciences (3)**

Exploration of themes and topics in the social sciences. (Seminar) (S)

### **111 Honors Study in English Communication (3)**

Exploration of the elements of English communication. (Seminar) (C)

### **112 Honors Study in Writing (3)**

Exploration of the elements of writing. (Seminar) Fall 2002: Negotiating Public Perspectives. (Cw)

### **113 Honors Course in Philosophy (1-4)**

(Seminar)

### **114 Honors Course in History (1-4)**

(Seminar)

### **115 Honors Course in Political Science or Economics (1-4)**

(Seminar)

### **116 Honors Course in Sociology or Anthropology (1-4)**

(Seminar)

### **117 Honors Course in Psychology (1-4)**

(Seminar)

### **118 Honors Course in Speech Communication or Journalism (1-4)**

(Seminar) Fall 2002 and Spring 2003: Special Honors Sections of COM 101 Public Speaking; Special Honors Section of COM 103 Interpersonal Communication. (C)

### **119 Honors Course in Interdisciplinary Studies (1-4)**

(Seminar) Spring 2003: Loss in the Lives of Children and Adolescents.

### **121 Honors Course in Mathematics (1-4)**

(Seminar) Fall 2002: Special Honors Section of MTH 108 Recreational Problem-Solving. (M)

### **122 Honors Course in Physical Sciences (1-4)**

(Seminar) Fall 2002: Special Honors Section of PHY 203 Elementary Physics I; Special Honors Section of PHY 273 Elementary Physics Laboratory I (N). Spring 2002: Special Honors Section of PHY 204 Elementary Physics II (N)

### **123 Honors Course in Biological Sciences (1-4)**

(Seminar)

### **124 Honors Course in Fine Arts (1-4)**

(Seminar)

### **125 Honors Course in Language or Literature (1-4)**

(Seminar)

### **201, 202 Honors Colloquium (3 each)**

(Lec. 2, Rec. 1) Fall 2002: Genetic Technology and Public Policy in the New Millennium (L) or (S)

### **203 The Prepared Mind: Critical and Analytical Problem Solving (3)**

Introduction to problem solving through the development of creativity, critical thinking, and communication skills. Focus on individual development in these areas. (Seminar) (L)

### **301, 302 Honors Tutorial (3 each)**

(Practicum) Fall 2002 and Spring 2003: Administrative Internship.

### **311 Honors Tutorial in Fine Arts (1-3)**

(Seminar) Fall 2002: Special Honors Section of ARH 364 American Art and Artifacts; John Wayne to Woody Allen: Images of Masculinity in American Cinema.

**312 Honors Tutorial in Language or Literature (1-3)**

(Seminar) Spring 2003: Pilgrimage—On the Road of Life: Utopia & Apocalypse in the Natural World.

**313 Honors Tutorial in Philosophy (I and II, 1-3)**

(Seminar) Fall 2002: Wondering About Childhood.

**314 Honors Tutorial in History (1-3)**

(Seminar) Spring 2003: Special Honors Section of HIS 328 The Holocaust. (L)

**315 Honors Tutorial in Political Science or Economics (1-3)**

(Seminar) Spring 2003: Contemporary Mass Movements and Refugee Flows.

**316 Honors Tutorial in Sociology or Anthropology (1-3)**

(Seminar)

**317 Honors Tutorial in Psychology (1-3)**

(Seminar)

**318 Honors Tutorial in Speech Communication or Journalism (1-3)**

(Seminar) Spring: 2003: Special Honors Section of COM 345 Gender and Communication; Mediated Women—The Images of Women in Popular Culture.

**319 Honors Tutorial in Interdisciplinary Studies (1-3)**

(Seminar) Fall 2002: Special Honors Section of NUR 360 The Impact of Death on Behavior (L) [Not accepted for BLS credit]; The Wisdom Traditions of the World's Religions; Special Honors Section of PHY 205 Elementary Physics III. Spring 2003: Money and Misery; The Darwins and Victorian England; From Tin Pan Alley to Swing: The Poetry of American Music and the Emergence of Mass Culture in the 1920s, 1930s, & 1940s.

**321 Honors Tutorial in Mathematics (1-3)**

(Seminar) Spring 2003: Problem Solving.

**322 Honors Tutorial in Physical Sciences (1-3)**

(Seminar)

**323 Honors Tutorial in Biological Sciences (1-3)**

(Seminar)

**331, 332 Honors Tutorial in Human Science and Services (1-3 each)**

(Seminar)

**341, 342 Honors Tutorial in Business (1-3 each)**

(Seminar)

**351, 352 Honors Tutorial in Nursing (1-3 each)**

(Seminar)

**361, 362 Honors Tutorial in Engineering (1-3 each)**

(Seminar)

**371, 372 Honors Tutorial in Resource Development (1-3 each)**

(Seminar)

**381, 382 Honors Tutorial in Pharmacy (1-3 each)**

(Seminar)

**401, 402 Honors Project (3 each)**

(Independent Study)

**411, 412 Honors Seminar (3 each)**

(Seminar) 411—Fall 2002: Globalization and the Multinational Corporation; The Art of Survival. 412—Spring 2003: Civilization and the Life of the Soil; Special Honors Section of PSC 303 The Politics of the Vietnam War.

**Human Development and Family Studies (HDF)**

*Chairperson:* Professor Newman

**180 Personal and Career Development in Human Services (1)**

Exploration of skills and interests related to career development. Seminar for human service career opportunities. Understanding of short- and long-term goal process emphasized. (Seminar) HDF students only. S/U only.

**190 First Year Leaders Inspired to Excellence (2)**

Leadership development course focusing on leadership theories, personal and academic adjustment issues, civic leadership and community service and basic communication skills. Core requirement for the minor in leadership studies (Lec. 2) Concurrent enrollment in URI 101.

**200 Life-Span Development I (3)**

Physical, social, cognitive, and emotional growth and development of young children within the family and varied cultural settings. Review of contemporary issues and their relevance for social policy. (Lec. 3)

**201 Life-Span Development II (3)**

Physical, social, cognitive, and emotional growth and development from adolescence to senescence. Attention to varied cultural settings and relevant social policy. (Lec. 3)

**202 Research Perspectives in Human Development and Family Studies (3)**

Introduction to research processes in human development and family studies. Emphasis on reading and evaluating the research literature and preparing and presenting literature reviews. (Lec. 3) Pre: admission to the human development and family studies program.

**203 Introduction to Work with Children (4)**

Theory and practice in care, teaching, and guidance of preschool children. Lectures, discussion, and participation in a field setting with concurrent enrollment in 204. (Lec. 3, Lab 3) Pre: 200.

**205 Family Financial Issues Across the Life Span (3)**

Introduction to financial issues faced by families and individuals at each stage of the life cycle from different income levels, family types and cultural backgrounds. (Lec. 3)

**210 Family Resource Management (3)**

Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. (Lec. 3) Pre: 205 or permission of chairperson.

**225 Consumer in the Economy (3)**

Application of basic economic principles to consumer problems in a complex marketplace, buyer-seller relationships, effective consumer decision making, effects of government policies on consumers. (Lec. 3) Pre: 205 or course in economics. (S)

**230 Marriage and Family Relationships (3)**

Male-female and other close relationships in courtship and family systems as influenced by personality and culture in a changing society. Professional and functional orientation. (Lec. 3)

**290 Modern Leadership Issues (3)**

Introductory leadership class. Topics include basic leadership theories, international governance/economic systems, critical thinking, and leadership in: US education; community service organizations; families; diverse workplaces. Core option for the leadership studies minor. (Lec. 3)

**297 Contemporary Issues in Student Development (1-3)**

Student orientation, leadership, and training practices presented by various Student Affairs and other University programs, such as Student Life, Residential Life, Health Services, University College, and Affirmative Action. (Seminar) May be repeated for up to 6 credits. S/U only.

**298 Contemporary Issues in Student Development (1-3)**

Student leadership models and practices in various student development settings, such as Student Affairs, Student Life, Residential Life, University College, and Health Services. (Seminar) Topic A: FLITE is service learning.

**301 Curriculum in Early Childhood (3)**

Program planning and teaching techniques that foster development of the young child in all curriculum areas. Includes Piagetian assessment and three hours per week in a local child care setting. (Lec. 2, Lab. 3) Pre: 203 and admission to the early childhood education program, or permission of instructor.

**302 Literature for Children (3)**

Literary heritage of American children from all subcultures and criteria for the selection and presentation of literature to children. (Lec. 3) Pre: junior standing.

**303 Early Childhood Practicum (4)**

Early childhood curriculum design and assessment supervised teaching for three hours a week in the Child Development Center with preschool and kindergarten age children. (Lec. 3, Lab. 3) Pre: 301 or permission of instructor.

**306 Infant Development (4)**

Study of development in the first three years including family interaction and early education. Emphasis is on cultural differences in parenting. Supervised observation/participation working with infants and toddlers three hours a week included. (Lec. 3, Lab. 3) Pre: 200.

**310 Adolescent Growth and Development (3)**

Physical, psychological, social, and emotional growth and development of the individual during adolescent years. Lecture, discussion and participation in a field setting with concurrent enrollment in 311. (Lec. 3) Pre: 201.

**311 Early Field Experience With Adolescents (1)**

Supervised observation and participation experience working with adolescents. Pre: concurrent with 310. S/U only.

**312 Adult Development (3)**

Identification of influences, processes, and forces shaping adult development to late life. Environmental and lifetime theoretical approaches emphasized and stage theories reviewed. (Lec. 3) Pre: concurrent enrollment in 313.

**313 Early Field Experience With Adults (1)**

Supervised observation/participation experience working with adults. Pre: concurrent with 312. S/U only.

**314 Introduction To Gerontology (3)**

Introduction to the study of aging processes: biological, psychological, and social theories. Health, social, and other age-related problems. Lecture, discussion, and participation in a field setting with concurrent enrollment in 315. (Lec. 3). Pre: 201.

**315 Early Field Experience With Aging (1)**

Supervised observation/participation experience working with the aging. Pre: concurrent with 314. S/U only.

**357 Family and Community Health (3)**

Specific health and maintenance concerns throughout the life span. Community and world health needs and related agencies. (Lec. 3) Pre: junior standing.

**400 Child Development: Advanced Course (3)**

Review and critique of major theories of child development. Examination of research studies and issues associated with the first decade of life. Emphasis on cultural contexts. (Lec. 3)

**418 Personal Finance (3)**

Personal financial planning and decisions for attaining individual and family goals. Factors that affect, protect, and enhance financial security. (Lec. 3) Pre: 205 or permission of instructor.

**421 Death, Dying and Bereavement (3)**

Exploration of human death, dying and bereavement. Focus on biomedical, psychological, social and multicultural dimensions. Implications for social policy. (Lec. 3) Pre: 202.

**424 Personal Finance Applications (3)**

Application of principles of family financial planning and decision making. Emphasis on mathematical and analytical evaluation and analysis including the use of computer software. (Lec. 3) Pre: 418 or permission of instructor.

**426 Retirement Planning (3)**

Explanation and evaluation of financial information needed for effective retirement planning, including defining goals, estimating expenses, and analyzing resources. Pre: 418 or permission of instructor.

**428 Consumer Protection (3)**

Effectiveness of diverse approaches to consumer protection. Analysis of techniques such as information disclosure, standards for products and services, government and private agencies, redress channels, and legislation. (Lec. 3) Pre: 205 or 220 or permission of instructor.

**430 Family Interaction (3)**

Interdisciplinary approach to the dynamics of intrafamily relationships, interactions of family units and family members within the sociocultural environment. Implications for social policy. (Lec. 3) Pre: 202 and 230.

**431 Family and the Elderly (3)**

Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations, and societal trends relative to family life. (Lec. 3)

**432 Perspectives on Parenting (3)**

Historic examination of childhood and parenting philosophies and comparison of practices among different cultures. Attention to contemporary social policy and practices surrounding parenting. (Lec. 3) Pre: 200, 201 and 202.

**433 Family Life Education (3)**

History, philosophy and goals of Family Life Education including requirements for certification. Program planning, implementation and evaluation. Current issues, trends, research and theory. Emphasis on diversity of clientele and settings. (Lec. 3) Pre: 202 and 230.

**434 Children and Families in Poverty (3)**

Interdisciplinary approach to understanding the effects of poverty with attention to cultural, political and policy issues and implications. (Lec. 3) Pre: senior standing in the major or permission of instructor and 202. Service learning.

**437 (or SOC 437) Law and Families in the United States (3)**

Seminar to investigate family roles, relationships, rights, and responsibilities as defined by the law. Emphasis on explicit and implicit family policy revealed in the various branches of law. (Seminar) Pre: 200 and 230 or SOC 212.

**440 Environmental Context of Aging (3)**

Study of normal aging related changes as design determinants of the physical environment. Identifies theories and models of person-environment interaction and environment-behavior issues and procedures for post-occupancy evaluation studies. (Lec. 3) Pre: 202 and 314.

**450 Introduction to Counseling (3)**

Introduces students in human sciences to interviewing and counseling skills in both professional and paraprofessional settings. Integrates theory, practice, and application by didactic and experiential learning. (Lec. 3) Pre: senior or graduate standing, or permission of chairperson.

**451 Financial Counseling and Debt Management (3)**

Examination of debt and budgeting problems affecting families. Utilization of a problem-solving approach and inclusion of financial counseling strategies for coping with financial issues and becoming proactive in family financial management. (Lec) Pre: 418 and 450.

**455 Assessment in Early Childhood (3)**

An overview of cognitive, affective, and psychomotor assessments used by early assessment techniques, and examination of current trends and practices. (Lec. 3) Pre: student teaching or equivalent and permission of instructor. In alternate years. Next offered spring 2002.

**456 Assessment Practicum (3)**

Supervised experience in completing cognitive, affective, and psychomotor assessments of young children. (Practicum) Pre: credit or concurrent enrollment in 455. In alternate years. Next offered spring 2002.

**477, 478 Field Experience in Family Financial Counseling and Planning (3)**

Approved, supervised work experience related to consumer well-being. Examples include research, advocacy, education, and dissemination of information, or provision of service. (Practicum) Pre: senior standing or permission of instructor. S/U credit. Not for graduate credit.

**480 Senior Field Experiences in Community Agencies (6–12)**

Senior field experience in community agencies (Practicum) Service learning. Pre: concurrent enrollment in 481; senior standing and permission of instructor. Application must be made on or before Feb. 1 in the year preceding internship. Orientation and learning contract occurs semester before field work. Not for graduate credit. S/U only.

**481 Field Experience Seminar (3)**

Group discussion of field experience in community agencies and related academic assignments. Includes senior reflections and portfolio. (Seminar) Service learning. Pre: Concurrent enrollment in 480 and permission of instructor. Not for graduate credit.

**492 Leadership Minor Portfolio (1)**

Preparation of portfolios required for graduation with minor in leadership studies. (Seminar) pre: enrollment in leadership studies minor.

**497 Special Problems (1–3)**

Open to qualified seniors who wish to do advanced work primarily consisting of lab or field experiences. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit. S/U only.

**498 Special Problems (1–3)**

Open to qualified seniors who wish to do advanced work. Conducted as a seminar or supervised individual project. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit.

**500 Human Development Seminar (3)**

Contemporary research issues emerging in the human development literature at five stages of development (Infancy, childhood, adolescence, adulthood, and old age), with emphasis placed on continuity and transition across the life span. (Seminar) Pre: 400 or 420 or equivalent, or permission of instructor.

**505 Human Sexuality and Counseling (3)**

Historical, cultural, and developmental issues in human sexuality and counseling. Implications for self and client understanding through personal exploration and desensitization to sensitive topics. (Lec. 3) Pre: graduate standing or permission of instructor.

**506 Rhode Island Early Childhood Institute (1–3)**

Intensive institute focused on contemporary issues in early childhood education in Rhode Island and the nation. Topics vary, with discussion of theoretical, empirical, and practical issues. (Seminar) Pre:

Enrollment in Early Childhood Institute program or permission of instructor. May be repeated as topics vary.

**507 (501) Seminar in Early Childhood Education**

Seminar in trends and model programs in early childhood education. Special attention to substantive evaluation and program design issues for the professional early childhood educator. (Seminar) Pre: student teaching or equivalent classroom experience or permission of instructor.

**511 (502) Seminar in Infancy and Early Childhood (3)**

Survey and critical examination of research from infancy and early childhood. Implications for diverse populations and human service settings will be drawn. (Seminar) Pre: graduate standing or permission of instructor

**512 (503) Seminar in Middle Childhood and Adolescence (3)**

Survey and critical examination of research from middle childhood through adolescence. Implications for diverse populations and human service settings will be drawn. (Seminar) Pre: 500 or permission of instructor.

**513 Seminar in Adult Development (3)**

Critical examination of research on development from the onset of legal adulthood to the beginning of late life. Highlights multicultural nature of adult experience in U.S. and implications for social policy. (Seminar) Pre: 500 or permission of instructor.

**514 (520) Seminar in Older Adulthood (3)**

Review of major theories of aging and application in clinical and policy contexts. Emphasis on current research and practice issues. Interdisciplinary focus on biopsychosocial aspects of growing older. (Seminar) Pre: graduate standing or permission of instructor.

**518 Seminar in Life-Span Financial Issues (3)**

Survey and critical examination of research on life-span financial issues. Implications for diverse populations and human service settings will be drawn. (Independent Study) Pre: 418 or permission of instructor.

**527 Health Care Policy and the Elderly (3)**

Present and future problems in policy development to meet health care needs of the elderly. Consideration of historical aspects, demographic change, policy models. (Seminar) Pre: graduate standing.

**530 Advanced Family Studies (3)**

Intensive study of theories in the family field, integrated with contemporary family issues and family intervention. (Seminar) Pre: graduate standing or permission of the instructor.

**533 Family Policy and Program Evaluation (3)**

Seminar examining the political, socio-economic and cultural forces influencing development and implementation of national and local family policies with emphasis on evaluations of child and family programs. (Seminar) Pre: graduate standing or permission of instructor

**535 Families Under Stress: Coping and Adaptation (3)**

Theoretical models of family interaction, development, and stress as applied to understanding of family behavior in managing stress or events. Concepts of stress, vulnerability, adaptability, coping, regenerative power, social supports, and related research. (Seminar) Pre: 430, 570, or equivalent graduate course work in family development or family sociology and permission of instructor.

**550 Vocational Information and Career Development (1–3)**

Classification and description of jobs and industries; study of occupational trends; needs of special groups entering the labor market; vocational development theories and counseling for long-range career planning. (Lec. 3) Pre: graduate standing or permission of instructor.

**551 Counseling Theory and Techniques (3)**

Theoretical foundation and practice of counseling with diverse adult populations. (Lec. 3) Pre: graduate standing or permission of instructor.

**553 Higher Education Practicum (3)**

Supervised practicum in higher education placements. Emphasis on applied assignments in the initial stages of college student personnel program. (Practicum) Pre: prior or concurrent enrollment in 567, permission of instructor. S/U only.

**559 Gender Issues in Therapy (3)**

Systemic integration of the issues and therapeutic dilemmas growing out of society's changing views of women and men. Emphasis on research, therapist self-awareness, and evaluation of current therapies. (Seminar) Pre: 450 or equivalent and graduate standing or permission of instructor.

**560 Group Procedures and Leadership (3)**

Approaches and processes for conducting a range of group interventions from small group meetings to psychoeducational techniques. A practical and theoretical approach to facilitation skills, team leadership and group dynamics in higher education and other adult settings. Enrollment is limited. (Lec. 2, Lab. 4) Service learning. Pre: graduate standing or permission of instructor.

**562 Organization Development in Human Services (3)**

Conceptual and technical components of organization development (OD) and consultation to various types of organizations, with emphasis on human

service arenas. Approaches to the different phases of intervention in planned change efforts using theoretical frameworks, case, and client applications. (Lec. 2, Lab. 4) Service learning. Pre: graduate standing or permission of instructor

### **563 Marital and Family Therapy I (3)**

Major theoretical perspectives, including system theory as related to therapy. Communication and relationship skills, negotiation and behavioral contracting, treating specific relationship problems, therapy evaluation. (Seminar) Pre: 430 and permission of instructor.

### **564 Marital and Family Therapy II (3)**

Major contemporary theories of family therapy and the development of family therapy as a unique intervention strategy; special consideration of issues and problems commonly confronted in conducting family therapy. (Seminar) Pre: 563.

### **565 Family Therapy Practicum (3)**

Supervised clinical experience in marriage and family therapy. Case materials will be presented by students, and taped segments of actual counseling sessions will be reviewed. (Lec. 1, Lab. 5) Pre: admission to MFT program or permission of instructor. May be repeated for a maximum of 18 credits.

### **566 Theoretical and Clinical Problems (3)**

Examination of major ongoing and emerging theoretical issues in family therapy. The implications of these problems in clinical practice with families. (Lec. 3) Pre: 564 and graduate standing.

### **567 Principles and Practices of College Student Personnel (3)**

Survey of the historical, philosophical, sociological, and cultural influences on college student personnel work as a profession and exploration of selected functional areas within student affairs. (Lec. 3) Pre: graduate standing in CSP and permission of instructor.

### **568 College Student Development and Learning (3)**

Examination of human development and learning of students in higher education. Emphasis on psychosocial, intellectual and moral development in a sociohistorical context. (Lec. 3) Pre: 567.

### **569 Assessment in Family Therapy (3)**

Administration and interpretation of assessment instruments for treatment, planning, and evaluation. Ethical, legal, and theoretical issues related to family systems assessment are discussed. (Seminar) Pre: graduate standing or permission of instructor.

### **570 Research in Human Development and Family Studies (3)**

Historical, philosophical, and procedural foundations of scientific inquiries into individuals and families. Explores the various ways to acquire information about human development and family rela-

tionships. (Lec. 3) Pre: graduate standing or permission of instructor.

### **573 Legal Issues in Higher Education (1-3)**

An overview of the effect of federal and state legal systems on university administration and service delivery. Reviews authorities and agencies, major court decisions, and the application of substantive and procedural law principles. (Lec. 1-3) Pre: graduate standing or permission of instructor. In alternate years.

### **574 Environmental Theory and Assessment in Higher Education (3)**

Overview of selected person-environmental interaction theories and assessment frameworks applicable in higher education settings. Emphasis on campus ecology, cultural, perceptual, human aggregate, physical/architectural, and behavior setting approaches. (Seminar) Pre: 568 and 570.

### **575 Cultural Competence in Human Services (1)**

Exploration of skills needed to enhance a diverse work environment and other human service settings. (Seminar) Pre: permission of instructor.

### **576 Diversity in Higher Education (2)**

Survey of the historical and current demographical profile of students in higher education. Emphasis on implications for programs, policies, and leadership. (Lec. 2)

### **577 Seminar: Topics in Higher Education (1-3)**

Recent developments and current issues in higher education. May be repeated for a maximum of 6 credits. (Seminar)

### **578 Ethical, Legal, and Professional Concerns in Family Therapy (3)**

Ethical, legal, and professional issues encountered by family therapists in the delivery of services. These aspects of therapy practice along with systemic theory are cornerstones of competent practice. (Seminar) Pre: 563 and 565, 530 and 535, and concurrent enrollment in 583.

### **580 Professional Seminar (1-3)**

Emphasizes initial implementation phases of master's research requirement as well as legal, ethical, and professional issues. (Seminar) Pre: advanced standing and permission of instructor.

### **581 Professional Seminar (1-3)**

Emphasizes research applications, completion of master's research requirement, and making a transition to a professional position. (Seminar) Pre: concurrent enrollment in 584 and permission of instructor.

### **583, 584 Master's Internship (3 or 6 each)**

Supervised field experience in various settings. Culminating experience integrates program theory and skills. (Practicum) Service learning Pre: advanced standing and permission of instructor. For

College Student Personnel only. Concurrent enrollment 580 for 583, and 581 for 584. S/U credit.

### **595 Master's Project: Action Research (1-6)**

Number of credits is determined each semester in consultation with the major professor. Minimum of 6 credits is required of students who have chosen the action-thesis option. (Independent Study) S/U credit.

### **597, 598 Advanced Study (1-3 each)**

Survey of important research contributions significant to the understanding of human development and relationships. (Independent Study)

### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. Minimum of 6 credits is required of students who have chosen the thesis option. (Independent Study) S/U credit.

## **Human Science and Services (HSS)**

Dean: Professor McKinney

### **120 Introduction to Human Science and Services (3)**

Survey of contemporary human service needs and delivery systems with emphasis on historical development, values, ethics, agency structures and functions, and consumers. (Lec. 3) Pre: any one of the following—ECN 100, PSC 113, SOC 100, PSY 113, HDF 200 or 201.

### **130 Introduction to Hunger Studies (3)**

Survey exploring the nature and extent of hunger in the United States, food and dietetics, public policy, food production and distribution, and programs to provide food to hungry people. (Lec. 2, Lab. 2)

### **140 Ways of Knowing in Human Science and Services I (1)**

Examination of the human service field; exploration and identification of educational and career goals. (Seminar) Service learning. Pre: 120 or concurrent registration.

### **141 Ways of Knowing in Human Science and Services II (2)**

Exploration and identification of education and career goals; documentation of learning experiences; development of program of study. (Seminar) Service learning. Pre: 120 or concurrent registration, 140.

### **170 Field Experience in Human Science and Services I (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students,

instructor, and site supervisor. (Practicum) Pre: admission to the human science and services program and permission of instructor.

### **270 Field Experience in Human Science and Services II (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students, instructor, and site supervisor. (Practicum) Pre: admission to the human science and services program and permission of instructor.

### **320 Introduction to Research in Human Science and Services (3)**

Consideration of the philosophy, principles, methods, and materials involved in research in the human sciences. Emphasis also on research reading, writing, and presentation skills. (Lec. 3)

### **350 Foundations of Public Policy in Human Services (3)**

The analysis of recent public policy proposals in various areas of human services through differing ideological assumptions of traditional and contemporary views of helping professionals. (Lec. 3) (S)

### **370 Field Experience in Human Science and Services (6-12)**

Supervised field experience in human service agencies. Prior to placement, the student must develop a learning contract in consultation with the agency and his or her faculty advisor. (Practicum) Pre: junior standing in human science and services and permission of instructor. S/U only.

### **399 Senior Project in Human Science and Services (3)**

Supervised project conducting research or creating a product for a human services agency. (Independent Study) Pre: senior standing in human science and services.

### **470 Fourth-Year Field Experience in Human Science and Services (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students, instructor, and site supervisor. (Practicum) Pre: admission to the human science and services program and permission of instructor. Not for graduate credit.

### **480 Senior Seminar in Human Science and Services (3)**

Interdisciplinary capstone seminar, with content developed to fit learning goals and programs of study of the students. Portfolio development and assessment as culminating experience. (Seminar) Pre: senior standing in human science and services and permission of instructor. Not for graduate credit.

### **491, 492 Special Problems (1-3 each)**

Advanced work in the human services under the supervision of a faculty member. (Independent Study) Pre: permission of instructor and the Division of Interdisciplinary Studies. Not for graduate credit in human development and family studies.

### **530 Multidisciplinary Health Seminars for the Elderly (3)**

Field experience for students in various health disciplines. Development of assessment techniques, curricular materials, and team delivery of health seminars to the elderly at community sites. (Seminar) Service learning. Pre: graduate standing or permission of instructor. Clark and

### **590 Seminar in Human Science (3)**

Investigation of human science as lived experience, reflective inquiry, and reflective practice. Development and presentation of individual projects embodying these characteristics of human science. (Seminar)

## **Industrial and Manufacturing Engineering (IME)**

*Chairperson:* Professor Knight

### **220 Introduction to Industrial Engineering (3)**

Role of industrial engineers, productivity and quality in production systems, optimization, work measurement, micromotion study and standard data, job evaluation, human factors and ergonomics. (Lec. 3) Pre: MTH 141.

### **240 Manufacturing Processes (3)**

Introduction to manufacturing processes. Processes, measurement, accuracy, and precision as they relate to deformation, structure, and material properties. Includes laboratory demonstrations and experiments in machining, casting, and metrology. (Lec. 2, Lab. 3) Pre: CHM 101, PHY 204 or 214, credit or concurrent enrollment in CVE 220.

### **325 Computer Tools for Engineers (3)**

Visual basic programming, applications and case study, engineering design and drafting, computer-aided drawing, AutoCAD drawing tools, create templates and other commands. (Lec. 3) Pre: EGR 106, MTH 141.

### **340 (or CHE 340) Materials Processing and Metrology I (3)**

An introduction to the fundamentals of materials processing and the relationship to material properties. Manufacturing properties of materials. Characteristics and basic analysis of forming processes, material removal processes and joining processes. (Lec. 3) Pre: CHE 333 or 437 and CVE 220.

### **391, 392 Special Problems in Industrial Engineering (1-3 each)**

Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson.

### **404 Engineering Economy and Project Planning (3)**

Effects of economics on engineering decisions in design, selection, and product or project proposals, project planning, resource allocation and scheduling using computer based tools. (Lec. 3) Pre: 411. Not for graduate credit in industrial and manufacturing engineering.

### **411 Probability and Statistics for Engineers (3)**

Introduction to probability and statistics in engineering applications including data analysis, probability theory, random variables, probability distributions, moment-generating functions, sampling and sampling distributions, statistical estimation, and hypothesis testing. (Lec. 3) Pre: MTH 243 or permission of instructor.

### **412 Statistical Methods and Quality Control (3)**

Study of statistical methods and quality control in engineering applications including sampling and sampling distributions, statistical inference, quality improvement tools, control charts, process capability, design of experiments, and acceptance sampling. (Lec. 3) Pre: 411 or STA 409 or permission of instructor.

### **432 Operations Research: Deterministic Systems (3)**

Introduction to major areas of operations research and their application to systems analysis. Linear programming, transportation and transshipment models, elementary network analysis, and related topics. (Lec. 3) Pre: MTH 342, 362 or equivalent.

### **433 Operations Research: Stochastic Systems (3)**

Markov chains, dynamic programming, queuing theory, simulation, forecasting, inventory models, simple stochastic models, and their relation to selected problems. (Lec. 3) Pre: 411 and MTH 342 or permission of instructor.

### **443 Machining and Machine Tools (3)**

Machine tool motions, power requirements, and machining times. Mechanics and economics of metal machining. Introduction to numerical control and computer-aided programming of CNC machine tools. (Lec. 3) Pre: CVE 220 and IME 240 or 340.

### **444 Assembly and Handling Automation (3)**

Types and economics of automatic assembly systems. Analyses of automatic feeding and orienting techniques for small parts. Application of robots in assembly. (Lec. 3) Pre: MCE 263 and IME 240 or 340.

**446 (or MCE 446) Metal Deformation Processes (3)**

Study of the characteristics of metal flow under different loading conditions. Theories, capabilities, and limitations of a wide range of deformation processes applied to industrial metalworking. (Lec. 3) Pre: 240 or 340, CVE 220, and CHE 333.

**449 (or MCE 449) Product Design for Manufacture (3)**

Techniques for analyzing product structures for ease of assembly and manufacture. Manual, robot, and high-speed mechanized assembly systems considered for mechanical and electronic products. Covers choice of material and processes in early design. (Lec. 3) Pre: 240 or 340, 443, or permission of instructor.

**451 Industrial Engineering Design I (3)**

Stochastic and deterministic models of production and inventory systems. Aggregate planning, push and pull production control systems. Lean manufacturing, scheduling. (Lec. 3) Pre: 432, 433 or permission of instructor.

**452 Industrial Engineering Design II (3)**

A team project approach to industrial engineering design including assembly lines, transfer lines, cellular manufacturing, flexible manufacturing facilities, operation and material flow design; facilities design and operation; production systems design. (Lec. 3) Pre: 451 or permission of instructor.

**460 Product Design for Environment (3)**

Principles and practices of designing more environmentally beneficial products. Environmental effects. Life cycle analysis, recycling and remanufacturing. Design for disassembly and environment. Group projects on product and process design using LCA and DFE analysis tools. (Lec. 3) Pre: 240 or 340, CHE 333 or 437.

**491, 492 Special Problems (1–6 each)**

Advanced work under the supervision of a member of the and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**500 Network Application in Industrial Engineering (3)**

Industrial systems problems that can be formulated in terms of network. Critical path method/PERT applications, maximum flow in network, network analysis and synthesis, max-flow and min-cost network. GERT stochastic network modeling and applications. (Lec. 3) Pre: 432 or permission of instructor. In alternate years.

**513 (or STA 513) Statistical Quality Assurance (3)**

Topics in statistical quality control systems. Single, multiple, and sequential sampling. Design and analysis of a wide variety of statistical control systems used in conjunction with discrete and con-

tinuous data, for several kinds of data emission. (Lec. 3) Pre: 412 or equivalent.

**525 Simulation**

See Computer Science 525.

**533 Advanced Statistical Methods for Research and Industry (3)**

Describing and analyzing data, design of experiments, analysis of variance, regression analysis, and applications in industry and applied science research. (Lec. 3) Pre: 411 or permission of instructor.

**540 Production Control and Inventory Systems (3)**

Theory and practice of industrial production control and inventory systems. A broad spectrum of mathematical models for static, dynamic, perpetual, and periodic inventory systems as they affect and relate to production. (Lec. 3) Pre: 432 or permission of instructor.

**541 Advanced Materials Processing (3)**

Engineering analyses in the processing of materials. Rapid manufacturing fundamentals. Non traditional manufacturing techniques. Dynamic coupling, tool-work-piece interaction, energy and thermal analysis; mechanics of material removal and displacements. (Lec. 3) Pre: 240 or 340, or permission of instructor.

**542 Introduction to Computer-Aided Manufacturing (3)**

Use of computers in manufacturing. Solid modeling principles and applications. Numerical and adaptive control. CNC programming. Introduction to rapid manufacturing. (Lec. 3) Pre: 240 or permission of instructor.

**543 Fundamentals of Machining (3)**

Fundamental treatment of the mechanics and economics of metal machining and grinding. Includes an introduction to numerical control and computer-aided programming of CNC machine tools. (Lec. 3) Pre: CVE 220 and IME 240 or 340 or permission of instructor. Not for graduate credit for students with credit in 443.

**544 Automatic Assembly (3)**

Types and economics of automatic assembly systems. Analysis of automatic feeding and orienting techniques for small parts. Application of robots in assembly. Economics of assembly systems for printed circuit boards. (Lec. 3) Pre: 240 or permission of instructor. Not for graduate credit for students with credit in 444.

**545 Manufacturing Systems: Analysis, Design, Simulation (3)**

Problems in manufacturing system analysis and design. Quantitative models and simulation methods applied to manufacturing planning, control, scheduling, resource allocation, and decision making in various types of manufacturing systems. (Lec. 3) Pre: MTH 363 or permission of instructor.

**546 Advanced Metal Deformation Processes (3)**

Theory of metal flow under different loading conditions. Prediction of metal forming process capabilities. Advanced topics include effects of anisotropy and mechanics of powder forming. (Lec. 3) Pre: 340 or permission of instructor. Not for graduate credit for students with credit in 446.

**549 (or MCE 549) Advanced Product Design for Manufacture (3)**

Techniques for analyzing product structures for ease of assembly and manufacture. Considers mechanical and electronic products and choice of materials and processes. A design project and term paper are required. (Lec. 3) Pre: 240 or 340 and credit or concurrent enrollment in 444 or permission of instructor. Not for graduate credit for students with credit in 449.

**550 Design for Producibility (3)**

Project work on product development, collaboration with industry, and submission of design project report. Concentration on effect of design decisions on manufacturing efficiency and cost. (Independent Study) Pre: 449 or 549.

**555 Engineering Applications of Mathematical Programming (3)**

Sensitivity analysis and pricing problems, practical problems in degeneracy and duality, decomposition methods for large-scale systems, applied convex, integer, nonlinear, and quadratic programming methods. An introduction to stochastic programming. (Lec. 3) Pre: 432 or permission of instructor. In alternate years.

**591, 592 Special Problems (1–6 each)**

Advanced work under supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**634 Design and Analysis of Industrial Experiments (3)**

Further development of topics in analysis of variance. Randomized blocks, Latin squares and related designs, factorial experiments, confounding and fractional replications, and split-plot designs. Design and analyses of engineering experiments. (Lec. 3) Pre: 533.

**660 Methods of Optimization (3)**

Methods of optimization: indirect, direct elimination, climbing. Geometric programming. Problems and other topics in applied optimization. (Lec. 3) Pre: CSC 550 or permission of instructor. In alternate years. Next offered 2003–04.



### 691, 692 Advanced Special Problems in Industrial Engineering (1–6 each)

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only.

## Insurance (INS)

Dean: Professor Mazze

### 301 Fundamentals of Risk Management and Insurance (3)

Basic course in risk management and insurance. Emphasis on personal risk management and the personal lines coverages: homeowner's insurance, personal automobile insurance, and basic life insurance policies. (Lec. 3) Proficiency test available.

### 414 Commercial Property and Liability Insurance (3)

Analysis of commercial property and liability risk exposures and their related coverages. Coverages includes general property and liability insurance and specialized topics for marine, fidelity, surety, and professional liability exposure. (Lec. 3) Not for graduate credit.

### 425 Life Insurance (3)

Analysis of the many types of life insurance and health insurance contracts, computation of premiums and reserves, and contract interpretation. Included is an analysis of the uses of life insurance contracts. (Lec. 3) Note: This course is preparation for the Rhode Island state licensing examination in life and accident and health insurance and for Part I of the charter life underwriter examination. Not for graduate credit.

### 433 Social Insurance (3)

Analysis of the network of state and federal economic security programs including the OASDHI system, unemployment compensation, temporary disability programs, and the workers' compensation system. (Lec. 3) Pre: ECN 201 and 202, or permission of instructor.

### 471 Topics in Insurance (3)

Analysis of selected topics and current issues in the insurance marketplace. Topics will vary from semester to semester. (Seminar) Pre: FIN 331, INS 301 and 425, or permission of instructor.

### 491, 492 Directed Study (3 each)

Directed readings and research work including insurance problems under the supervision of a member. (Independent Study) Pre: permission of instructor and junior or senior standing.

### 493 Internship in Insurance (3)

Approved, supervised work experience with participation in management and problem solving related to insurance. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in insurance. S/U only.

### 692 Directed Study in Insurance (1–3)

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

## Internships and Experiential Education (ITR)

### 301, 302 Field Experience I, II (3–12 each)

Field experience gained at placement site through participation in the ITR program. The experience will be defined by a job description and learning contract arranged by the ITR director between the student intern, the intern's faculty advisor, and the relevant agency supervisor. (Practicum) Pre: junior or senior standing, a minimum quality point average of 2.50, participation in the ITR program, and permission of faculty advisor. May be repeated for a maximum of 24 credits. S/U credit.

### 303, 304 Colloquium I, II (3 each)

Seminar format. Discussions of issues and problems raised by internship experiences in public service agencies. (Seminar) Pre: concurrent enrollment in 301 for 303, and in 302 for 304. Required for and open only to students enrolled in the ITR program.

## Italian (ITL)

Section Head: Professor Trivelli

### 101 Beginning Italian I (3)

Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Italian is required. Will not count toward the language requirement if the student has studied Italian for more than one year within the last six years. (F)

### 102 Beginning Italian II (3)

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

### 103 Intermediate Italian I (3)

Development of facility in reading texts of moderate difficulty, supplemented by further work in

grammar, conversation, and composition. (Lec. 3) Pre: 102 or equivalent. (F)

### 104 Intermediate Italian II (3)

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

### 105 Basic Conversation (1)

Practice in basic Italian conversation skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for maximum of 2 credits.

### 205, 206 Conversation and Composition (3 each)

Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. (Lec. 3) Pre: 104 or permission of chairperson.

### 301, 302 Civilization of Italy (3 each)

The most important aspects of Italian civilization. 301: From the Middle Ages to the end of the Renaissance. 302: From the seventeenth century to the present. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

### 305 Advanced Conversation and Composition (3)

Intensive practice in spoken and written Italian. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

### 309 Techniques of Translation (3)

Principles and techniques of translating written Italian into English and vice versa. Text materials of different types used in practical work: scientific, journalistic, business, and literary language. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

### 315 Italian Cinema (3)

Representative Italian films and their directors through viewing and discussions of films, lectures, and readings. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

### 325, 326 Introduction to Italian Literature (3 each)

Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. (Lec. 3) Pre: 205 or 206 or permission of chairperson. (A)

### 391, 392 Masterpieces of Italian Literature (3 each)

Reading in English translation of selected Italian authors of greatest significance. 391: Medieval and Renaissance. 392: Post-Renaissance to twentieth century. (Lec. 3) Not for major credit in Italian. (A) (F) for 391; (A) for 392.

### 395 Dante's Divine Comedy (3)

Reading in English translation of Dante's chief work. (Lec. 3) Not for major credit in Italian. (A) (F)

### 408 The Italian Language (3)

Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from the thirteenth to twentieth century. (Lec. 3) Pre: one 300-level course or permission of instructor.

**455 Selected Italian Authors (3)**

Works of one or more major authors of Italian literature. Specific author(s) are designated the semester before the course is given. (Lec. 3) Pre: one 300-level course or permission of instructor.

**465 Topics in Italian Literature (3)**

Special topics or themes in Italian literature not treated or emphasized in other courses. (Lec. 3) Pre: one 300-level course or permission of instructor.

**480 Business Italian (3)**

Study of concepts and terminology relating to the Italian business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level Italian course, or permission of instructor.

**481 The Works of Dante Alighieri (3)**

Dante's works with special attention given to analysis and interpretation of the Divine Comedy from the social, religious, philosophical, and political viewpoints of the Middle Ages. (Lec. 3) Pre: one 300-level course or permission of instructor.

**497, 498 Directed Study (3 each)**

Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a member and approval of chairperson.

**Japanese (JPN)**

*Chairperson:* Professor Morello

**101 Beginning Japanese I (3)**

Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Japanese is required. Will not count toward the language requirement if the student has studied Japanese for more than one year within the last six years. (F)

**102 Beginning Japanese II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate Japanese I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate Japanese II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**Journalism (JOR)**

*Interim Chairperson:* Professor Levin

**110 Introduction to the Mass Media (3)**

Surveys newspapers, magazines, radio, movies, television, advertising, and emerging technologies.

Examines economic and news functions of each. Considers First Amendment, legal and ethical problems, restrictions, and social consequences of media. (Lec. 3) Recommended for nonmajors. Not for major credit in journalism. (L)

**115 Foundations of American Journalism (3)**

Introduction to basic theories and principles of American journalism, and some of the major issues journalists confront. Examines news media audiences, effects, freedom, and responsibility. (Lec. 3) For journalism majors only.

**210 History of American Journalism (3)**

Development of American newspapers, magazines, and broadcast industry with analysis of the ideas that have changed American journalism. Exploration of the journalists' experience at periods in American history; the effects of economic and social changes on the press. (Lec. 3) Pre: 110 or 115 or permission of instructor. In alternate years. Next offered fall 2003.

**211 History of Broadcasting (3)**

Survey of broadcasting. Examines its pioneers and the impact of significant historical events as covered by radio and television. Considers the origins of modern news shows, talk-show formats, magazine broadcasts, and quiz shows. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered fall 2002.

**215 Free Speech and American Society (3)**

Legal and social parameters of freedom of speech in the United States. The legal and social history of freedom of speech will be examined and applied to discussions of recent free-speech controversies. (Lec. 3) Pre: 110 or 115.

**220 Media Writing (3)**

An introduction to writing for newspapers, magazines, broadcasting, and public relations. Includes consideration of objectivity, information gathering, language use, clarity and style, legal and ethical concerns. (Lec. 2, Lab. 2) Pre: WRT course with a grade of C or better, passing a departmentally administered entrance exam, ability to type.

**230 Introduction to Radio and Television News (3)**

Beginning course in the principles and techniques of radio and television news gathering and writing. Stress is placed on copy formats, broadcast style, and basic production techniques. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**310 Mass Media Law (3)**

Role of government and the law in the communication of news, including basic laws affecting freedom of the press, journalists' privileges and responsibilities, privacy, broadcasting, and advertising. Case studies. (Lec. 3) Pre: junior standing and 110 or 115 and one 300-level journalism skills course or permission of instructor.

**311 Media Criticism in America (3)**

Examines news media performance in the United States by studying the works of media critics, both historical and contemporary. Practice in media monitoring and writing media criticism. (Lec. 3) Pre: 110 or 115 or permission of instructor. Next offered spring 2003.

**313 Other Voices: Alternative Media in the United States (3)**

Critical analysis of nontraditional media in the United States, including black, religious, feminist, gay and lesbian press, as well as broadcast stations operated by and for minority groups. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered spring 2004.

**320 Public Affairs Reporting and Writing (3)**

Practice in gathering and writing news of public affairs, including local and state government, courts, law enforcement. Introduces public records, alternatives to straight news story, interviewing techniques, rewriting. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**321 Magazine Article and Feature Writing (3)**

Planning, researching, and writing articles and feature stories for magazines and newspapers. Discussion of markets, freelance and job opportunities. Articles written and submitted to publications. (Seminar) Pre: 220 with a grade of C or better, or permission of instructor.

**330 Television News (3)**

Intermediate course in news gathering and writing for television. Emphasizes reporting, writing, anchoring, and producing. Group work leads to production of a half-hour studio newscast. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better.

**331 Electronic News Gathering (3)**

Skill development in the visual technology of television news. Techniques of single-camera field production are stressed. Introduction to fundamentals of video tape editing; practice in ENG photography and editing. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better.

**340 Public Relations**

See Public Relations 340.

**341 Editing for Publication I (3)**

An introduction to editing for the print media, including newspapers, magazines, and public relations. Focuses on taking work written by others and preparing it for publication. Includes consideration of legal and ethical issues. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**345 Journalism Internship (3 or 6)**

Supervised experience in: (a) reporting and writing; (b) editing; (c) radio news; (d) television news; (e) public relations. Requires a minimum of 120 hours (3 credits) or 240 hours (6 credits). Weekly one-hour class meeting. Maximum of 6 credits allowed toward graduation. (Practicum) Pre: journalism majors and minors and public relations minors only. Prerequisite courses depend on internship. Permission of instructor and application required.

**410 Mass Media Issues (3)**

Critical analysis of current issues affecting journalists and society in general, based on readings, videotapes, case studies, and discussion. Emphasis on ethics and decision making. (Lec. 3) Pre: 110 or 115 and senior standing or permission of instructor. Not for graduate credit.

**415 Perspectives on Reporting (3)**

Critical assessment of reporting through the reading and analysis of various types of reporting, including literary journalism, muckraking, investigative reporting, and New Journalism. (Seminar) Pre: 110 or 115 and junior standing. Not for graduate credit.

**420 Advanced Reporting and Writing (3)**

Planning, developing, and writing complex news stories for publication. Emphasizes story-idea generation, information gathering from multiple sources, using public records and documents, and advanced interviewing techniques. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: junior standing and 320 with a grade of C or better. Not for graduate credit.

**440 Independent Study (1-3)**

Individual reading programs, research, or project in journalism or mass media. (Independent Study) Pre: junior standing and submission to chairperson of proposal signed by supervising faculty member. Not for graduate credit.

**441 Public Relations Practices**

See Public Relations 441.

**442 (342) Editing for Publication II (3)**

An introduction to designing and producing for the print media, including newspapers, magazines, and newsletters. Extensive use of computers and desktop-publishing technology. Includes consideration of legal and ethical issues. (Lec. 2, Lab. 2) Pre: 341 with a grade of C or better. Not for graduate credit.

**445 Special Topics in Journalism (3)**

Subject, course content, and years offered will vary according to expertise and availability of instructors. (Independent Study) Pre: permission of instructor. May be repeated for credit with different topic. Not for graduate credit.

**Labor Relations and Human Resources (LRS)**

Director: Professor Scholl

**432 Industrial Sociology**

See Sociology 432.

**480 (or ECN 480) Seminar in Labor Studies (3)**

Intensive studies examining various important topics in labor studies. Class discussion of assigned readings and student reports. (Lec. 3) Pre: Permission of instructor. Not for graduate credit.

**500 (or MGT 500) Labor Relations and Human Resources (3)**

Introduction to labor relations and human resources, including employment practices in unionized and non-union organizations; also issues related to data sources and research methodology. (Lec. 3) Pre: graduate standing or permission of instructor.

**503 Problems in Public Personnel Administration**

See Political Science 503.

**520 Developments in Worker Representation (3)**

Structure, functions, responsibilities, and programs of unions and union leadership. Emphasis on policies and decision making. Evaluation of labor and management performance. Consideration of administrative problems associated with growth of white collar unions. (Lec. 3) Pre: graduate standing or permission of instructor.

**521 (or PSC 521) Comparative Labor Relations Systems (3)**

Comparative labor and industrial relations systems, including union, management, and government functions and roles; also the functions of international organizations in labor relations. (Lec. 3) Pre: permission of instructor.

**526 (or ECN 526) Economics of Labor Markets (3)**

The theory of labor market behavior, and application of theory for public policy analysis in areas such as discrimination, unemployment, and education. (Lec. 3) Pre: ECN 201 and 202 or 590 or equivalent.

**531 Employment Law (3)**

Analysis of legislation protecting worker health, employment, income security, including OSHA, workers' compensation, equal opportunity, fair labor standards, Walsh-Healy and Davis-Bacon, pension funds, unemployment compensation, and social security. (Lec. 3) Pre: permission of Labor Research Center director.

**532 Seminar in Employment Law (3)**

Advanced seminar to review and evaluate current issues and changing trends in selected aspects of employment law. May be repeated for credit with different topic, for maximum of six credits. (Seminar) Pre: permission of instructor.

**533 Pension, Health Care, and Employee Benefit Programs (3)**

An analysis of employee assistance plans (EAPs), health fringe benefits, and pension plans and their negotiation within both private and public sectors. (Lec. 3) Pre: permission of instructor and Labor Research Center director.

**534 (or ECN 534) Information Sources and Uses in Labor Relations and Labor Economics (3)**

Analysis and use of data and information sources specific to the professional fields of labor and industrial relations and labor economics. A major project utilizing personal computer software is required. (Lec. 3) Pre: 526 and BAC 500 and 530 or permission of instructor. Not for graduate credit for M.B.A. or M.S. in accounting students.

**541 Labor Relations Law (3)**

Legal framework for private and public sector collective bargaining. Regulation of activities with emphasis on individual rights, collective rights, and policy considerations of federal and state courts, the NLRB, and state labor boards in determining society's rights. Case studies. (Lec. 3) Pre: graduate standing or permission of instructor.

**542 Labor Relations and Collective Bargaining (3)**

Collective bargaining literature, theories, and practice. Emphasis on the institutional features of bargaining in both public and private sectors as well as techniques, and dynamics of the bargaining process. (Lec. 3) Pre: graduate standing or permission of instructor.

**543 (or PSC 543) Public Sector Labor Relations (3)**

Public sector (state, municipal, federal, police, fire, K-12 education, and higher education) collective bargaining theory, practice, and legal foundations. Comprehensive case studies. (Lec. 3) Pre: credit or concurrent enrollment in 542 or permission of Labor Research Center director.

**544 (or HIS 544) Colloquium in Worker History (3)**

Selected topics in American worker history with an emphasis on the most recent literature in the field. (Seminar) Pre: graduate standing or permission of instructor.

**545 Arbitration and Mediation of Labor and Employment Disputes (3)**

Students prepare, present, and analyze labor and employment arbitration/mediations. The course also covers interest arbitration, and innovative methods for resolving disputes. Pre: graduate standing or permission of instructor.

**546 Negotiation and Alternative Dispute Resolution (3)**

Examination of the interpersonal dynamics of negotiations and conflict resolution processes, including interest-based or collaborative bargaining in a variety of contexts; e.g. labor relations, commu-

nity, environmental, divorce, racial, commercial. (Lec. 3) Pre: permission of instructor.

**551 (or MGT 551) Human Resource Strategy (3)**  
Human resource issues addressed in context of changing product and labor markets, including relationship between human resource policies; the economic, social, and political environment; and firm's strategic objectives. (Lec. 3) Pre: permission of instructor.

**579 (or EDC 579) Labor Relations and Collective Bargaining in Education**  
(or SS, 3) Collective bargaining in public and private educational sectors, K-12, higher education; literature, theory, practice, and legal foundations in education. Comprehensive case studies will be used. (Lec. 3)

**580 Professional Seminar in Labor Relations and Human Resources (3)**  
Advanced labor relations seminar of variable coverage and focus; adjusted yearly to consider most recent labor relations developments. Major research paper required. (Seminar) Pre: final semester graduate standing in labor relations and human resources and permission of Labor Research Center director.

**581 Internship: Labor Relations and Human Resources (3-6)**  
Variable length internship with a trade union, a public or private sector personnel or industrial relations department, or a governmental administrative or regulatory agency, under the supervision of both a URI Labor Research Center faculty member and a member of the affiliated organization. May be taken as one 6-credit unit or two 3-credit units. (Practicum) Pre: graduate standing in labor relations and human resources and permission of Labor Research Center director. S/U only.

**590, 591 Directed Readings and Research in Labor Relations and Human Resources (3 each)**  
Readings and research under the direction of LRC-associated faculty to meet individual student requirements. (Independent Study) Pre: graduate standing in labor relations and human resources and permission of Labor Research Center director and instructor.

## Landscape Architecture (LAR)

*Program Director:* Professor Simeoni

**201 Survey of Landscape Architecture (3)**  
Introduction to landscape design theory and composition as an applied art form. (Lec. 3) (A)

**202 Origins of Landscape Development (3)**  
Examines the impact of environment, social history, philosophy, art, and literature on architecture and landscape development from ancient to modern

times. Emphasis on European Renaissance through contemporary United States. (Lec. 3) (L)

**243 Landscape Architecture Graphics (4)**  
Introduction to landscape graphic communication techniques with emphasis on design and construction drawing and perspective illustration. (Lec. 2, Studio 4)

**244 Basic Landscape Architectural Design (4)**  
Introduction to the development of outdoor space with emphasis on the design process and the manipulation of spatial volumes. (Lec. 2, Studio 4) Service learning. Pre: 243.

**300 Computers in Landscape Architecture (4)**  
Intensive course in computer usage for landscape architects. Focus on the application of landscape architecture computer-aided design software to project development applications. (Lec. 2, Studio 4) Pre: sophomore standing in landscape architecture.

**301 Landform Expression (2)**  
Examines the three-dimensional relief of the Earth's surface as a physical design element. Introduction to methods of land measurement, graphic depiction, and sculptural interpretation. (Lec. 1, Lab. 2) Pre: 244 and MTH 111. Intended for landscape architecture majors only.

**343 Landscape Architecture Studio I (4)**  
Landscape concepts in graphic form. Emphasis on preparing landscape plans for small- to intermediate-scale properties. Students study in a professional studio environment. (Lec. 2, Studio 4) Pre: 201, 202, and 244. Intended for landscape architecture majors only.

**344 Landscape Architecture Studio II (4)**  
Continuation of landscape concepts and graphics. Emphasis on drawing landscape plans for intermediate- to larger-scale properties. Advanced rendering. (Lec. 2, Studio 4) Pre: 301, 343, and 345. Concurrent or prior enrollment in 346. Intended for landscape architecture majors only.

**345 Landscape Construction I (4)**  
A comprehensive survey of construction materials and their uses in landscape construction. (Lec. 2, Studio 4) Pre: 244 and 300. Intended for landscape architecture majors only.

**346 Landscape Construction II (4)**  
The study of soil adjustment; grading, drainage, cut and fill, reshaping of earth surfaces. (Lec. 2, Studio 4) Pre: 300, 301 and 345. Intended for landscape architecture majors only.

**353 (or PLS 353) Landscape Plants I (3)**  
Identification and description under fall conditions; classification and adaptation of the important trees and shrubs including broadleaf evergreens and their value in ornamental plantings. (Lec. 1, Lab. 4) Pre: BIO 104A or 112 or 102.

**354 (or PLS 354) Landscape Plants II (3)**  
Identification and description under winter and spring conditions; classification and adaptation of the coniferous evergreens, vines, and groundcovers and their value in ornamental plantings. (Lec. 2, Lab. 2) Pre: 353.

**399 Landscape Architecture Internship (1-6)**  
Directed work experience program at landscape architecture offices, contracting firms and related industries. (Practicum) Pre: permission of instructor.

**443 Planting Design (4)**  
The use of plant materials in landscape composition. Combines spatial definition of various land uses with plant selection. Preparation of plans, details, and specifications. (Lec. 2, Studio 4) Pre: 344 and 354. Intended for landscape architecture majors only. Not for graduate credit.

**444 Landscape Architecture Studio III (4)**  
Relationships between principles of landscape design and elements of the environment that contribute to development of ecologically based plans. Client conferences and specifications for woody ornamental plants. (Lec. 2, Studio 4) Service learning. Pre: 344 and 346. Intended for landscape architecture majors only. Not for graduate credit.

**445 Landscape Architecture Studio IV (4)**  
Study of comprehensive landscape architectural projects. Coordination of research, preparation of contract documents, and office procedures. (Lec. 2, Studio 4) Service learning. Pre: 443 and 444. Intended for landscape architecture majors only. Not for graduate credit.

**447 Professional Landscape Architectural Practice (3)**  
Professional practice, ethics, marketing design services, preparation of contract documents, and effective time management. (Lec. 3) Pre: senior standing in landscape architecture. Not for graduate credit.

**491, 492 Special Projects and Independent Study (1-3 each)**  
Special work to meet specialized needs in the landscape architecture profession. (Independent Study) Pre: permission of instructor. Not for graduate credit.

## Languages (LAN)

*Chairperson:* Professor Morello

**191 Beginning Foreign Language I (3)**  
Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. (Lec. 3) Pre: no prior experience in a specific language is required. May be repeated for credit for different languages. Choice of specific

language to be taught subject to availability of and student demand. (F)

### 192 Beginning Foreign Language II (3)

Continuation of 191. (Lec. 3) Pre: 191 or equivalent in same language as 191. May be repeated for credit for different languages. Choice of specific language to be taught subject to availability of and student demand. (F)

### 193 Intermediate Foreign Language I (3)

Development of facility in speaking, listening comprehension, writing, and reading texts of moderate difficulty in a language not included in regular departmental offerings. (Lec. 3) Pre: 192 or equivalent in the same language as 192. Choice of specific language to be taught subject to availability of and student demand. (F)

### 194 Intermediate Foreign Language II (3)

Continuation of 193. (Lec. 3) Pre: 193 or equivalent in the same language as 193. Choice of specific language to be taught subject to availability of and student demand. (F)

### 205, 206 Advanced Foreign Language I and II (3)

205: Further development of all language skills with emphasis on writing and reading. 206: Continuation of 205 (Lec. 3) Pre: for 205—HBW 104 or JPN 104 or LAN 194 or permission of instructor; for 206—205 or permission of instructor. (F)

## Latin (LAT)

*Section Head:* Associate Professor Suter

### 101 Beginning Latin I (3)

Latin grammar and syntax. Exercises in reading prose. (Lec. 3) Pre: no previous Latin is required. Will not count toward the language requirement if the student has studied Latin for more than one year within the last six years. (F)

### 102 Beginning Latin II (3)

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

### 301 Intermediate Latin (3)

Grammar review; readings such as Petronius' Satyricon. (Lec. 3) Pre: 102 or equivalent. (F)

### 302 Intermediate-Advanced Latin (3)

Study of Latin texts from different time periods and different genres; syllabus changes on a four-year rotational basis. (Lec. 3) Pre: 301 or permission of instructor. May be repeated for a maximum of 12 credits with different topics. (F)

### 310 Latin Across the Curriculum (1)

Reading of original Latin texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich study of different subjects by using texts in the original language. (Lec. 1) Pre: 301 or permission of instructor.

### 497, 498 Directed Study (1–6 each)

Individual readings and research. (Independent Study) Pre: acceptance of a project by a member; approval of section head. May be repeated for credit with different topic.

## Latin American Studies (LAS)

*Committee Chair:* Associate Professor Morín

### 390 The Hispanic Caribbean: Study Abroad in the Dominican Republic (3)

Emphasis on the Dominican Republic, Cuba, and Puerto Rico. Topics will include colonization and slavery, race, gender, religion, European and U.S. interventionism, migration, and development. (Lec. 3) Pre: SPA 104; HIS 180 is suggested.

### 397 Directed Study for Senior Research Project (3)

Research in a particular area of Latin American studies. Project must be approved by the LAS Committee. (Independent Study) Pre: approval of LAS Committee and instructor.

*The following are related courses offered by various departments of the University.*

#### Anthropology

303 New World Prehistory  
315 Cultures and Societies of Latin America  
470 Problems in Anthropology

#### Communication Studies

337 Intercultural Communication

#### Economics

338 International Economics  
363 Economic Growth and Development

#### History

180 Introduction to Latin American Civilization  
382 History of Modern Latin America  
391 Directed Study or Research  
508 Seminar in Asian or Latin American History

#### Political Science

201 Introduction to Comparative Politics  
431 International Relations  
432 International Government

#### Portuguese

335, 336 Topics in the Literature of the Portuguese-Speaking World  
497, 498 Directed Study

#### Spanish

305 Early Spanish-American Literature and Culture  
306 Modern Spanish-American Literature and Culture  
393 Modern Hispanic-American Literature in Translation  
470 Topics in Hispanic Literature  
488 Spanish-American Poetry and Drama  
489 The Spanish-American Narrative  
497, 498 Directed Study  
570 Topics in Hispanic Literature and Culture  
572 Evolution of Spanish-American Culture and Thought

574 Interpretations of Modern Spanish-American Thought

590 The Hispanic Presence in the United States

## Letters (LET)

*Coordinator:* Associate Dean Dvorak

### 151 Topics in Letters (3)

Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present. (Seminar) May be repeated for credit with different topic. (L)

### 351 Topics in Letters (3)

Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present, at an advanced level. (Seminar) Pre: junior standing. May be repeated for credit as often as the topic changes. (L)

## Library (LIB)

*Dean:* Professor Gandel

### 120 Introduction to Information Literacy (3)

In-depth exploration and practice of information literacy skills designed to support college-level research and lifelong learning. (C)

### 140 Special Topics in Information Literacy (1)

Introduction to core concepts of information literacy and essential skills in finding, analyzing, organizing, and presenting information. (Lec. 1) Must be taken concurrently with a course that requires information literacy skills.

## Library and Information Studies (LSC)

*Director:* Professor Havener

*Students in good standing may take up to six hours of graduate-level Library and Information Studies courses in their senior year with the permission of the director of the Graduate School of Library and Information Studies.*

### 502 Management of Library and Information (3)

Introduction to the process, principles, practices, theories and case studies in the administration, management, and supervision of libraries and information services. Focus on management functions: planning, organizing, directing, and controlling. (Lec. 3)

### 503 Collection Development (3)

Introduction to process, practices, and problems of collection building, maintenance, and evaluation regardless of format or subject of material, type of institutional setting, or community or client group served. (Lec. 3)

**504 Reference and Information Services (3)**

Practical experience in the use of basic information sources with readings and discussion on the philosophy and administrative aspects of reference work. (Lec. 3)

**505 Organization of Information (3)**

Theory and practice of organizing information following national and international standards; focus on bibliographic information. Emphasizes the understanding and application of cataloging and classification principles, standards, tools, bibliographic utilities and networks. (Lec. 3)

**506 Technical Services (3)**

Principles and policies in the acquisition, organization, conservation, and circulation of materials in libraries and information centers. Includes examination of automation of library processes. (Lec. 3)

**508 Introduction to Information Science and Technology (3)**

Introduction to the organization, retrieval, and analysis of information, and the technologies used to control the manipulation and dissemination of information in library and information settings.

**510 History of Books and Printing (3)**

The art and craft of book production through the ages; printers, methods, and materials with consideration given to the role of the book in cultural development. (Lec. 3)

**512 History of Libraries and Librarianship (3)**

The development of libraries and librarianship within a cultural, social, and economic context from antiquity to the present. (Lec. 3)

**513 Intellectual Freedom and Censorship (3)**

Historical development and current status of the concept of intellectual freedom and the restraints that past and present societies have imposed on it. Special attention given to the librarian's role in defense of intellectual freedom. (Lec. 3)

**514 Information Policy (3)**

This course provides an opportunity to examine the large world of information policy and how changing technology, specifically the Internet, has affected our information policies. (Lec. 3)

**520 School Library Media Services (3)**

The role of the library media specialist as teacher, information specialist, and instructional consultant, with emphasis on creating instructional programs and services in schools. Summer or fall semester prior to practicum. (Lec. 3) Pre: completion of 21 hours including core courses, 502–505, or permission of instructor.

**521 Public Library Service (3)**

Planning, evaluation, and programming in public libraries, with an emphasis on community analysis and responsive services. Development of a grant proposal or equivalent project required. (Lec. 3) Pre: 502 or permission of instructor.

**522 College and University Library Service (3)**

Study of the functions, organization, management, and services of college and university libraries. (Lec. 3) Pre: 502.

**523 Special Library Service (3)**

A survey of some of the major categories of special libraries in academia, corporations, foundations, government agencies and the military, typically including museums, conservatories, divinity schools, legal institutions, businesses, laboratories, industries, and healthcare organizations. (Lec. 3) Pre: 502.

**524 Library Instruction: Philosophy, Methodology, and Materials (3)**

An introduction to all aspects of instructing a diverse clientele in effective library use. Philosophy, cognition aspects, methodologies, media and administration, and coordination and evaluation of library instruction will be considered. (Lec. 3) Pre: 504 or permission of instructor.

**525 Multiculturalism in Libraries (3)**

Determining information needs and planning library collections, services, and programs for a diverse population. Historical, philosophical, and comparative aspects of multiculturalism in libraries will also be considered. (Lec. 3) Pre: Six graduate credits in library and information studies or permission of instructor.

**528 Media in the Library (3)**

The role of multimedia materials in library and information settings, including the selection, evaluation, organization, and utilization of audiovisual hardware and software, and an introduction to emerging communication technologies. (Lec. 3)

**529 Theory and Production of Library Media Communications (3)**

Introduction to the design and production of graphic, photographic, audio, video, and computer-based materials for library and information environments through the application of basic communication, perception, and learning theories. (Lec. 3)

**530 Reading Interests of Children (3)**

Building, maintaining, evaluating, and promoting collections for children in public libraries and elementary school media centers. Fiction and nonfiction books emphasized; digital and other resources also discussed. (Lec. 3)

**531 Reading Interests of Young Adults (3)**

Building, maintaining, evaluating and promoting collections to serve the special interests and information needs of adolescents in public and secondary school libraries. Focus on books; graphic novels, Internet, etc. included. (Lec. 3)

**533 Digital Resources for Children and Teens (3)**

Investigate informational, educational, and recreational resources, primarily on the Internet. Emphasis on selection, evaluation, promotion, and the development of information literacy. (Lec.3) Pre: 530 or 531 or permission of instructor

**535 Public Library Youth Services (3)**

Public library services to children and young adults, with emphasis on the development of programs to meet library goals and objectives. (Lec. 3) Pre: 502 or permission of instructor.

**537 Health Sciences Librarianship (3)**

Serves as an introduction to the field. Covers the literature, vocabulary, computer applications, reference tools, information retrieval, and environments relating to health sciences libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor.

**538 Law Librarianship (3)**

Introduction to legal bibliography and research and to a broad range of problems involved in the administration and operation of various kinds of law libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor.

**539 Business Reference (3)**

An introduction to all aspects of business reference sources and information services, including unique statistical and investment information on companies and industries. (Lec. 3) Pre: 504.

**540 Library Materials in the Humanities (3)**

Library resources in the humanities, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504.

**541 Library Materials in the Social Sciences (3)**

Library resources in the social sciences, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504.

**542 Library Materials in Science and Technology (3)**

Library resources in science and technology, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504.

**543 Government Publications (3)**

Survey of the publishing activities and publications of national, state, and local governments with emphasis on the publications of the United States government. (Lec. 3) Pre: 504.

**544 Visual Information Science (3)**

An introduction to the interdisciplinary study of visual information science related to visual information (data) collection, analysis, processing, transmission, utilization, and communication in modern and digital libraries and information centers. (Lec. 3) Pre: 504, 505, 508 or permission of instructor.

**545 Indexing and Abstracting (3)**

Principles and techniques of indexing for the purpose of information storage and retrieval. Includes periodical indexing, book indexing, automatic indexing, abstracting, and thesaurus construction. (Lec. 3) Pre: 504.

**546 Computer Systems in Library Automation (3)**

Introduction to principles of systems analysis and the tools of analysis. Study of library automation systems and networks and the application of new technologies to library operations and services. (Lec. 3) Pre: permission of instructor.

**547 Online Searching and Services (3)**

Introduction to computerized information retrieval and the provision of computerized information services in libraries, including hands-on experience. (Lec. 3) Pre: 504.

**548 Internet for Librarians (3)**

Introduction to tools, protocols and search utilities used to access information on the Internet. Hands-on experience integrating the Internet into traditional library and information services will be provided. Pre: 508 or permission of instructor.

**549 Information Storage and Retrieval (3)**

Theory, methods, evaluation, and research of analyzing, storing, indexing languages, information storage media, information storage and retrieval systems, and information seeking and retrieving in libraries and information services. (Lec. 3) Pre: 504, 505.

**550 Organization of Digital and Nonbook Resources (3)**

Using the most current international and national standards for organization of digital and nonbook resources, the course emphasizes not only bibliographic control of these resources for retrieval but also issues relating to subject analysis, standards, access, and other mark-up languages for better retrieval. (Lec. 3) Pre: 505.

**557 Research and Evaluation in Library and Information Services (3)**

Introduction to research methods for community analysis, information needs assessment, and evaluation of library and information services; critique of published research. Includes substantial paper involving significant independent study. (Lec. 3) Pre: completion of 15 hours or permission of instructor.

**562 Administration of Special Collections, Archives, and Manuscripts (3)**

Principles and techniques for administering manuscript and archival repositories, including acquisition policies, appraisal criteria, methodology, and preservation practices. (Lec. 3) Pre: core courses or permission of instructor.

**564 Introduction to Library Preservation (3)**

Organization, management, principles, and techniques as they apply to the development and administration of a library preservation program. Includes causes of deterioration of materials, deacidification, and reformatting and selecting for preservation. (Lec. 3)

**565 Rare Book Librarianship (3)**

Organization, management, principles, and techniques as they apply to the development and administration of rare book collections. (Lec. 3) Pre: 510 or permission of instructor.

**593 Independent Work (1-3)**

Supervised reading or investigation in areas of special interest to students who obtain written approval for such study prior to registration for the semester for which it is proposed. (Independent Study) Pre: 18 hours of library science with a B average. May be repeated for a maximum of 3 credits.

**595 Professional Field Experience (1-3)**

Directed field experience applying theory to practice in libraries, information centers, and related organizations under the joint supervision of a member of the faculty and the professional of the cooperating institutions. (Practicum) Pre: completion of at least 18 hours of library science with a B average. 45 hours per credit. May be repeated for a maximum of 3 credits.

**596 Professional Field Experience: School Library Media Practicum and Seminar (9)**

Directed field experience in two school library media centers (150 hours in elementary and 150 hours in secondary). Perform roles and demonstrate competencies of a library media specialist. Bi-weekly seminars. (Lec./Lab. 9) Pre: 520 with a B or better and 30 hours of library science with a B average or permission of the instructor.

**597 Selected Topics (3)**

Selected topics in library and information studies of current and special interest not covered in existing course offerings. Topics announced prior to each offering. (Lec. 3) Pre: permission of instructor.

**Linguistics (LIN)**

*Section Head:* Professor Rogers

**100 Language in Society (3)**

Topical approach to the study of language, varying from semester to semester and including, but not restricted to, such topics as the relationship of language to culture, society, behavior, geography, computers, and other languages. (Lec. 3)

**200 Language and Culture**

See Anthropology 200.

**202 Introduction to the Study of Language Evolution (3)**

The construction of theoretical models; the reconstruction of earlier stages of language, based on the structure of modern languages and their families. (Lec. 3) Pre: 200, 220, or ENG 330. (S)

**220 (or APG 220) Introduction to the Study of Language (3)**

Introduction to the analysis and description of a language's sounds, forms, syntax, and meaning; the relationship of linguistics to other disciplines; and a survey of major schools of linguistic thought. (Lec. 3) (S)

**320 (or APG 320) Sociolinguistics (3)**

Presentation of the major areas of micro- and macro-sociolinguistics: speech acts, registers, repertoires, language attitudes, social correlates of phonological and syntactic features and changes. (Lec. 3) Pre: 200 or 220.

**330 Dynamics of Language Distribution (3)**

Geolinguistic survey of present-day distribution of languages and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. (Lec. 3) Pre: 220.

**408 The German Language: Past and Present**

See German 408.

**414 Romance Linguistics (3)**

Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. (Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of section head. Some knowledge of Latin recommended but not required. Not for graduate credit.

**420 Second Language Acquisition (3)**

An evaluation of current trends and developments in the understanding of second language learning; analysis of second language acquisition research and its practical implications. (Seminar) Pre: 200 or EDC 312 or 3 credits of language courses numbered 300 or above, or permission of section head. Next offered spring 2004.

**431 Applied Linguistics in the Language Laboratory (1)**

Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. (Lab. 2) Pre: 9 credit hours of language courses at the 300 level or above, or permission of section head.

**497, 498 Directed Study (3 each)**

Individual research and reports on problems of special interest. (Independent Study) Pre: 220 and acceptance of project by member and approval of section head.

*The following are related courses offered in the departments of Communicative Disorders, English, Modern and Classical Languages and Literatures, Philosophy, and Psychology.*

CMD 373	Phonetics
CMD 375	Language Development
ENG 330	The Structure of American English
ENG 332	The Evolution of the English Language
ENG 336	The Language of Children's Literature
ENG 337	Varieties of American English
ENG 530	Studies in Language and Linguistics
FRN 503	History of the French Language
ITL 408	The Italian Language
PHL 440	Philosophy of Language
PSY 388	The Psychology of Language

**Literature in English Translation**

*Coordinator:* Professor Robert Manteiga

*The following courses are offered in the Department of Modern and Classical Languages and Literatures and may be used for major credit in comparative literature studies. They may not be used for major credit in English or languages. (CLA 391, 395, 396, 397 may be used for major credit in classics.)*

**Classics**

- 391 Ancient Laughter: The Comic Tradition in Greece and Rome
- 395 Greek Mythology: Gods, Heroes, and Humans
- 396 Myths of Rome
- 397 Greek Myth and Tragedy

**Comparative Literature Studies**

- 235 Modern Thought: Philosophy and Literature
- 250 Themes and Myths
- 335 Interdisciplinary Studies in Comparative Literature
- 350 Literary Theory and Criticism
- 450 Studies in Comparative Literature

**French**

- 391 Literature to 1789 in Translation
- 392 Nineteenth-Century Literature in Translation
- 393 Twentieth-Century Literature in Translation

**German**

- 392 Masterpieces of German Literature

**Italian**

- 391, 392 Masterpieces of Italian Literature
- 395 Dante's Divine Comedy

**Russian**

- 391, 392 Masterpieces of Russian Literature

**Spanish**

- 391, 392 Spanish Literature in Translation
- 393 Modern Hispanic-American Literature in Translation

*The following courses are offered in the English Department and may be used for major credit in comparative literature studies and in English. They may not be used for major credit in languages.*

**English**

- 160 Literatures of the World
- 335 Interdisciplinary Studies in Comparative Literature
- 350 Literary Theory and Criticism
- 366 Greek and Roman Drama
- 367 The Epic
- 468 Traditions of the Continental Novel
- 560 Studies in European Texts

*Literature in English translation courses and literature courses are offered in the Department of English and the Department of Modern and Classical Languages and Literatures, and constitute part of the offerings for a major in comparative literature studies.*

**Management (MGT)**

*Dean:* Professor Mazze

**110 Introduction to Business (3)**

Nature, philosophy, objectives, and scope of the American business system. Emphasis on the interrelations of the functional areas. (Lec. 3) Not open to juniors and seniors in the College of Business Administration. (S) Professor Sink's section is Writing Intensive [WI]

**300 Introduction to Management and Supervision (3)**

Functions of human resources management including group behavior, interpersonal relations, recruitment, and justice determination. Emphasis on developing analytical skills applied to personnel-related problems in organizational settings. (Lec. 3) Not open to business administration majors; no credit if 303 has been taken.

**301 Organization and Management Theory I (3)**

Management processes, organizational theory and behavior, organizational structure, international business, ethics, and environmental analysis. Emphasis on developing conceptual and analytical skills. (Lec. 3)

**302 Organizational Behavior (3)**

Introduction to organizational behavior; theory of human relations in industry; individual and group dynamics as well as motivational theories applied to current business issues, international business, and technological changes. (Lec. 3) Pre: 301.

**303 Human Resources Management (3)**

Role of the personnel department in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning, and occupational safety in the public and private sectors. Cases and lectures. (Lec. 3) Pre: 301 recommended.

**306 Skills Development in Organizational Behavior (3)**

Developing the managerial skills and competencies of leadership, motivation, conflict resolution, and interpersonal relations through dynamic cases, experiential exercises, and personal development sessions. (Lec. 3) Pre: 301, 302, or permission of instructor.

**321 Labor Problems (3)**

Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. (Lec. 3) Pre: ECN 201 or permission of instructor.

**380 Business and Society (3)**

Contemporary environmental issues confronting domestic and international management—pollution, government regulation, insider trading, equal opportunity, business ethics—are investigated. (Lec. 3)

**401 Women in Business and Management (3)**

Analysis of sex-role behavior in the workplace. The history, current status, and future prospects of women and men in business and the organizational response to the changing work force. (Lec. 3) Pre: 301 recommended. Not for graduate credit.

**402 (or COM 402) Leadership and Motivation (3)**

Examination of theory and research in the areas of leadership and motivation in organizational settings. Emphasis on application of theory in developing essential leadership skills within individuals and in creating effective motivational programs within organizations. (Lec. 3) Pre: 301, 302 or COM 220 or permission of instructor.

**407 Organization and Management Theory II (3)**

Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordination, control, and integration. Con-



ceptual skills for organizational analysis, including model and systems approaches. (Lec. 3) Pre: 301 or permission of instructor.

**408 Organization Development and Change (3)**  
Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, techniques, and cases for change agents and managers of change. (Lec. 3) Pre: 301, 407, or permission of instructor.

**410 Business Policy (3)**  
Case analysis is used to study strategic issues and problems of mission and goal setting, planning, implementing, and controlling in domestic and multinational firms. (Lec. 3) Pre: 301, ACC 202, FIN 301, MSI 309, MKT 301, BSL 333, senior standing in the College of Business Administration, or permission of instructor. Not for graduate credit.

**423 Labor Relations (3)**  
Public interest in labor relations and problems involved in collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community, and labor unions. (Lec. 3) Pre: 303. Not for graduate credit.

**426 Training and Development Theory and Practice (3)**  
Development of education programs in industry. Teaching and learning strategies. Needs assessment. Evaluation. (Lec. 3) Pre: PSY 113 and senior standing. Not for graduate credit.

**431 Advanced Management Seminar (3)**  
Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: 301.

**435 Compensation Administration (3)**  
Concepts, models, theories, and legislation related to the employee compensation process. Discussion and skill acquisition in job analysis, job evaluation, wage surveys, and performance appraisal. (Lec. 3) Pre: 303 or permission of instructor. Not for graduate credit.

**437 Human Resource Planning, Selection, and Placement (3)**  
Recruitment, selection, and placement of human resources. Integration of human resource plans with organizational strategic plans. Career planning and development. Affirmative action and equal opportunity aspects of selection and placement. (Lec. 3) Pre: ECN 368, MGT 303, or permission of instructor. Not for graduate credit.

**453 International Dimensions of Business (3)**  
Introduction to the international aspects of business, including the cultural, legal, and political environment faced by the multinational corporation.

(Lec. 3) Pre: senior standing or permission of chairperson. Not for graduate credit.

**480 Small Business Management (3)**  
Investigation and evaluation of the small business enterprise. Current literature studied and projects completed to enable students to understand and appreciate the operations of small businesses. (Lec. 3) Pre: senior standing in the College of Business Administration or permission of instructor.

**482 Entrepreneurship (3)**  
Procedure for starting one's own business including the following topics: the business idea, personality traits, feasibility analysis, business plan, and functional area basics. (Lec. 3) Pre: junior, senior or graduate standing or permission of instructor. Not open to students with credit in REN 325.

**491, 492 Special Problems (3 each)**  
Lectures, seminars, and instruction in research techniques, literature, and other sources of data in organizational management, industrial relations, and law with application to specific individual projects. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

**493 Internship in Management (3)**  
Approved, supervised work experience with participation in management and problem solving related to management. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit. S/U only.

**500 Labor Relations and Human Resources**  
See Labor Studies 500.

**551 Human Resource Strategy**  
See Labor Studies 551

**626 Organizational Behavior (3)**  
Incorporates the insights gleaned from the disciplines of psychology, sociology, anthropology, and the social sciences of politics, economics, and history in the study of the behavior of organizations and of their principal actors. (Lec. 3) Pre: 630 or equivalent.

**627 Advanced Organizational Theory and Behavior (3)**  
Previous knowledge of classical and traditional management thought used to provide concepts, analytical approaches, and skills for understanding how behavioral sciences influence complex organizational systems. (Lec. 3) Pre: 626.

**630 Organizational Theory and Behavior (4)**  
Management applied to business objectives, policies, organizationaling and control. Interpersonal dynamics in organizational settings. Role of human resource management. Emphasis on individual and structural factors affecting decision making. (Lec. 4) Pre: graduate standing.

**635 Consulting and Management Practice (3)**  
Review of the theory and practice of effective consulting and development of consultation skills. (Practicum) Pre: 630 or permission of instructor.

**638 Seminar in Management (3)**  
Class discussion of typical cases, original research work in the field of management with discussion of data collected and analyzed by individual students. (Seminar) Pre: permission of chairperson.

**639 Advanced Topics in Management (3)**  
Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: permission of chairperson.

**640 Compensation Administration (3)**  
Compensation and performance appraisal systems. Theory and techniques used to determine job worth. Special issues in compensation management, such as relating pay to performance through appraisal techniques and pay compression. (Lec. 3) Pre: 630.

**641 Human Resource Development (3)**  
Techniques used in procurement and development of human resource. Planning through recruitment, selection, and placement to training and development. Integration of HRD process with organizational strategic plans. (Lec. 3) Pre: 630.

**655 International Business Management (3)**  
Examines the problems and characteristics of international management by focusing on the role of the multinational corporation in a cross-cultural setting. (Lec. 3) Pre: 630 or equivalent.

**656 Japanese Business Systems (3)**  
A comparative study of Japanese business management systems by means of readings, case studies, and lectures. Focus on management practices in Japanese firms and problems of coping with environmental factors in Japan and the United States. (Lec. 3) Pre: 630 or permission of instructor.

**657 International Comparative Management and Culture (3)**  
An interdisciplinary course which examines the effects of culture on managerial behavior and decision making. (Lec. 3) Pre: 630.

**691, 692 Directed Study in Management (1-3 each)**  
Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**697 Doctoral Research Seminar (3)**  
Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Semi-

nar) Pre: enrollment in Phase II of the Ph.D. program in business administration.

#### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit

## **Management Information Systems (MIS)**

*Dean: Professor Mazze*

#### **310 Applications of Microcomputer Software in Business (3)**

In-depth study of microcomputer software used in business applications. Emphasis on spreadsheets, data management, presentation graphics, and communication software. Student projects and microcomputer lab assignments required. (Lec. 3) Pre: BAC 110.

#### **320 Business Applications Programming (3)**

Techniques for the development of business software applications using appropriate hardware platforms and software environments. Emphasis on creation and manipulation of data structures used in business systems. (Lec. 3) Pre: BAC 110.

#### **410 Information Technology in Business Organizations (3)**

An overview of existing and developing information technologies used in business organizations. Topics include computer hardware and software, business information systems, operating systems, data communications, and local- and wide-area networks. (Lec. 3) Pre: 320 may be taken concurrently. Not for graduate credit for students in the College of Business Administration.

#### **420 Business Data Communications and Networking (3)**

Introduction to data communications and computer networks within the context of modern business organizations. Emphasis on current technologies and their impact on management information systems. (Lec. 3) Pre: 310 or 320. Not for graduate credit.

#### **425 Business Applications Programming II (3)**

Intermediate concepts for developing software solutions to business applications using appropriate hardware platforms and software environments. (Lec. 3) Pre: 320. Not for graduate credit.

#### **430 Management Systems Analysis (3)**

Analysis, concepts, methods, and techniques used in the evaluation of business processes leading to the design strategies for developing management information systems. (Lec. 3) Pre: 320. Not for graduate credit.

#### **435 Structured Programming for Business Operations (3)**

Intermediate and advanced programming concepts for use in business organization language(s) and platform(s). Will reflect current needs and practices in business environments. (Lec. 3) Pre: 320. Not for graduate credit.

#### **440 Management of Databases (3)**

Concepts and methods in management of data: creation, design, and implementation; data models; integrity; and security. Use of database management systems software. (Lec. 3) Pre: 320.

#### **445 Design for Management Information Systems (3)**

Concepts, methods and techniques used in the design of management information systems. Field work required. (Lec. 3) Pre: 430, 440. Not for graduate credit.

#### **491, 492 Special Problems (1-3 each)**

Lectures, seminars, and instruction in management information systems with emphasis on student research projects. (Independent Study) Pre: permission of instructor. Not for graduate credit.

#### **493 Internship in Management Information Systems (3)**

Approved supervised work experience with participation in management and problem solving related to information systems. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit. S/U only.

#### **495 Seminar in Management Information Systems (3)**

Preparation and presentation of papers on selected topics. (Seminar) Pre: 320. Not for graduate credit.

#### **600 (MSI) Managing with Information Resources (2-3)**

Concepts of information technologies and systems as they relate to the information-age organization. Major focus is on how the various information resources can be managed to facilitate organizational effectiveness. Topics include information and communication technologies, decision support and information systems, technology-enabled process re-engineering, and information architecture. (Lec. 2-3) Pre: BAC 500 or permission of instructor.

#### **630 Management Systems Analysis and Design (3)**

An overview of Systems Analysis and Design, and its role in the development of information systems. Major focus is on the methodologies, techniques and tools used to create successful information systems. (Lec. 3) Pre: 600 or permission of instructor.

#### **635 Database Management Systems (3)**

Design and analysis of complex multi-user databases used in real time business transaction processing. The class will contain discussion and ex-

amination of databases for strategic and tactical purposes. (Lec. 3) Pre: 440 or equivalent or permission of instructor

#### **691, 692 Directed Study in Management Information Systems (1-3)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor

#### **695 Seminar in Management Information Systems (3)**

Preparation and presentation of papers on selected topics in Management Information Systems. (Seminar) Pre: permission of instructor

#### **697 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and the research techniques used to address those questions pertinent to Management Information Systems. Recent developments and current issues are addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration

#### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit

## **Management Science (MSI)**

*Dean: Professor Mazze*

#### **301 Foundations of Computer Technology in Business (3)**

Applied computer techniques used to solve business problems. Computers, various software programs, and case studies will be used to facilitate intelligent and informed decision making. (Lec. 3) Restricted to nonbusiness majors.

#### **309 Operations Management (3)**

Operations management problems in global and domestic environments. Operations strategy, service, and manufacturing; forecasting; inventory management; production and material requirements planning; scheduling; just-in-time; and quality management. (Lec. 3) Pre: BAC 110 and 202 or permission of instructor.

#### **350 Managerial Decision Support Systems (3)**

Methodologies and information technologies that support decision making. Emphasis on the use of PC-based analytical software for solving managerial problems; case studies and group problem solving. (Lec. 3) Pre: BAC 202 and MIS 310.

#### **450 Forecasting (3)**

Forecasting for advanced students in all areas of business administration. Introduction to time series analysis including decomposition of the multiplica-

tive model, exponential smoothing, and ARIMA processes. A variety of software systems are employed, with special emphasis on microcomputer systems. (Lec. 3) Pre: BAC 110 and 202 or permission of instructor.

#### **455 Analysis of Managerial Data (3)**

Theory and application of selected statistical methods, including linear models, sampling, and analysis of surveys. Emphasis will be placed on the extraction of information from large data sets and the utilization of statistical information in the decision-making process. (Lec. 3) Pre: BAC 110 and 202 or permission of instructor. Not for graduate credit for students in the College of Business Administration.

#### **460 Management of Quality Control and Improvement (3)**

Principles of quality management including control charts, process management, and other techniques, with emphasis on the effect of these principles on decision making in various organizations. (Lec. 3) Pre: BAC 110 and 202 or permission of instructor.

#### **465 Advanced Operations Management (3)**

Advanced topics in operations management such as demand management; multi-item, multi-location inventories; capacity planning and control; theory of constraints; and time-based competition in manufacturing and service operations. (Lec. 3) Pre: 309 or permission of instructor.

#### **470 Advanced Managerial Decision Support Systems (3)**

Development and presentation of decision support, executive information, and expert systems. Emphasis on the collaborative solution and the presentation of cases. (Lec. 3) Pre: 350.

#### **480 Managerial Application of Simulation (3)**

Evaluation and design of computer simulation models for operational and strategic decision making. (Lec. 3) Pre: BAC 110 and 202 or permission of instructor.

#### **491, 492 Special Problems (1–3 each)**

Lectures, seminars, and instruction in operations research techniques, with emphasis on student research projects. (Independent Study) Pre: permission of instructor.

#### **493 Internship in Management Science (3)**

Approved supervised work experience with participation in management and problem solving related to management science. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in management science. S/U only.

#### **495 Seminar in Management Science (3)**

Preparation and presentation of papers on selected topics. (Seminar) Pre: 350. Not for graduate credit in management science.

#### **601 Business Research Methods:**

##### **Linear Models (3)**

Theory and application of regression and correlation analysis, analysis of variance, and experimental design. (Lec. 3) Pre: BAC 500, 520, 530 or permission of instructor.

#### **691, 692 Directed Study in Management Science (1–3 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

#### **695 Seminar in Management Science (3)**

Preparation and presentation of papers on selected topics in management science. (Seminar) Pre: MBA 500, BAC 500 and 520.

#### **697 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and the research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration.

#### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

## **Marine Affairs (MAF)**

*Chairperson:* Professor Juda

#### **100 Human Use and Management of the Marine Environment (3)**

Examination of uses and management efforts in the coastal and ocean environment. Assessment of problems arising from those uses and attempts to conserve resources, protect the environment, and minimize use conflicts in the context of changing technological capabilities, knowledge, and values. (Lec. 3)

#### **120 New England and the Sea (3)**

An examination of the human and environmental impacts of the sea and its uses on the New England and Gulf of Maine region. Considers marine resource use and management from colonial to modern times. (Lec. 3)

#### **220 Introduction to Marine and Coastal Law (3)**

Basic principles of marine and coastal law in the United States. An integration of coastal zone, outer continental shelf, fisheries, marine pollution, and admiralty laws. (Lec. 3)

#### **312 The Politics of the Ocean (3)**

Survey of decision making with respect to the marine environment at the international, national, and local levels. Special emphasis on laws and treaties

of the United States and the United Nations. (Lec. 3) Pre: 100.

#### **320 Shipping and Ports (3)**

An introduction to waterborne movement of cargo. An examination of shipping and port operations, innovations in maritime transportation systems, and the interplay of the operators, shipping, and ports. (Lec. 3) Pre: 100.

#### **330 World Fishing (3)**

The role of marine fisheries and aquaculture in world food production. Social, economic, legal, and scientific issues in fisheries management. (Lec. 3) Pre: 100.

#### **350 Caribbean Geography**

See Geography 350.

#### **410 Senior Seminar in Marine Affairs (3)**

Advanced work in the management of the coastal and marine environment, with special emphasis on case studies and student projects. Seniors only. (Seminar) Required for seniors in marine affairs. Not for graduate credit in marine affairs.

#### **413 Peoples of the Sea**

See Anthropology 413.

#### **415 Marine Pollution Policy (3)**

Introduction to management techniques for marine pollutants (biodegradable materials, nutrients, petroleum, metals, synthetic organics, radioactive materials, plastics, heat, and dredge spoils) with emphasis on strategies to limit environmental impacts. (Lec. 3) Pre: junior standing or above. Not for graduate credit.

#### **434 Introduction to Environmental Law**

See Community Planning 434.

#### **456 Polar Resources and Policy (3)**

Description of Arctic and Antarctic natural resources and examination of current issues associated with their development. Analysis of alternative management regimes with reference to treaties and continuing international negotiations. (Lec. 3)

#### **461 Coastal Zone Management (3)**

Examination of activities and management efforts in the coastal zone of both developed and developing countries and their impacts on the environment. Resolution of use conflicts. (Lec. 3)

#### **465 GIS Applications in Coastal and Marine Management (3)**

The use of geographical information systems (GIS) technology in coastal and marine settings. Database acquisition and management are emphasized. Case application in coastal zone management, artificial habitat, and fisheries management. (Lec. 3)

#### **471 Island Ecosystem Management (3)**

An ecosystem approach to the sustainable development and environmental management of mid-oceanic islands in the Caribbean and the Pacific

Ocean. Topics include tourism, reef fishery, cultural heritage, and marine conservation. Simulation game on island-wide management process. (Lec. 3)

#### **472 Marine Recreation and Tourism Management Seminar (3)**

Analysis of domestic and international case studies emphasizing identification of and solutions to problems of coastal recreation and tourism. Use of experiential learning. Emphasis placed on presentation, leadership, and negotiation skills. (Seminar)

#### **475 Human Responses to Coastal Hazards and Disasters (3)**

Examines the impact of hazards and disasters on human population inhabiting the coastal zone. Sets human adaptations to coastal hazards and disasters in an historical context. Extracts lessons learned for comparative analysis. (Lec. 3)

#### **482 Quantitative Methods in Marine Affairs (3)**

Introduction to descriptive and inferential statistics in geography and marine affairs. Emphasis on the spatial application of statistical tests with particular utility to the geographer and marine affairs student. (Lec. 3) Pre: STA 220 or equivalent for undergraduate students.

#### **484 Environmental Analysis and Policy in Coastal Management (3)**

Analysis of environmental policy strategies as applied in federal and state coastal management programs. Emphasis on coastal environmental assessment and program evaluation techniques, hazards management, regulatory frameworks, and environmental ethics. (Lec. 3)

#### **490 Field Experience in Marine Affairs (3-6)**

Supervised undergraduate internship within an approved work setting designed to provide students with on-the-job experience relevant to their academic training and career goals. Students are responsible for securing internship positions and learning contract. (Practicum) Pre: permission of instructor, senior standing recommended. Not for graduate credit.

#### **491, 492 Special Problems (3 each)**

Individual guidance in major readings and methods of research. (Independent Study) Pre: permission of chairperson.

#### **493 International Field Course in Coastal Management (1-2)**

Project-oriented course in coastal management. Students will collect field data overseas during the fall/spring intersession, with report writing completed during the following spring semester. (Practicum) Pre: permission of instructor. May be repeated for up to 3 credits.

#### **499 Directed Study (1-3)**

Individual research and reports on problems of special interest, including honors thesis research. (Independent Study) Pre: permission of instructor.

#### **502 Research Methods in Marine Affairs (3)**

Emphasis on the application of alternative research methods utilized in a typical interdisciplinary study. Development of specific research projects. (Lec. 3) Pre: 482 or permission of chairperson.

#### **511 Ocean Uses and Marine Sciences (3)**

Introduction to selected ocean uses focusing on the interplay of public policy and marine science. Emphasis on policy implications of uses such as resource and energy extraction. (Lec. 3)

#### **512 (or PSC 512) Marine Science and Policy Analysis (3)**

The role of ocean science in initiation, forecasting, implementation, and evaluation of public policy is examined through waste disposal, protected areas, and oil development, among other topics. (Seminar) Pre: 511 or permission of instructor. For graduate standing only.

#### **515 Marine Pollution Policy (3)**

Introduction to management techniques for marine pollutants (biodegradable materials, nutrients, petroleum, metals, synthetic organics, radioactive materials, plastics, heat, and dredge spoils) with emphasis on strategies to limit environmental impacts. (Lec. 3) Pre: graduate standing only.

#### **516 (or CPL 516) Seminar on the Urban Waterfront (3)**

The urban environment and its evolution, structure, and function as it pertains to metropolitan waterfronts and small recreational harbors. Emphasis on the permitting process, public participation, marine recreation, and management issues. Field trip and student project required. (Seminar)

#### **520 Seminar in Coastal Margin Management (3)**

Nature of oil, mineral, and fishery resources on the continental shelf and environmental issues are reviewed. Emphasis on the utility of data for policy development. (Seminar)

#### **521 Coastal Zone Law (3)**

Examination of the authority of different levels and agencies of government to make decisions affecting coastal regions. Survey of existing and proposed state and national legislation affecting coastal regions. (Lec. 3)

#### **523 Fisheries Law and Management (3)**

Examination of the relationship between law and fisheries policy on the international and national levels, law relating to fisheries, jurisdictional levels, function of law in implementing fisheries management policy. (Lec. 3)

#### **530 International and Domestic Coastal Area Management Seminar (3)**

Using international and national coastal management case studies, this seminar focuses on coastal management problems using an interdisciplinary project-orientated approach to problem solving. Emphasis is placed on development of leadership, presentation, and negotiation skills. (Seminar)

#### **544 Water Resources Law (3)**

A comprehensive examination of key legal concepts within surface and groundwater law. Legal issues are framed within local, state, regional, federal, and international management and administrative settings. (Lec. 3) Pre: graduate standing or approval of instructor.

#### **562 Admiralty Law (3)**

Fundamentals of admiralty law: collisions at sea, bills of lading, marine insurance, and rights of seamen. Case studies of marine transportation problems and their resolution by law. (Lec. 3)

#### **563 Maritime Transportation (3)**

Passenger and commodity transportation. Analysis of the relationship between transportation services and the spatial distribution of activities. Emphasis on multimodal transport and bulk commodities. (Lec. 3) Pre: senior or graduate standing or permission of instructor.

#### **564 Port Operations and Policy (3)**

Analysis of coastal and international trade routes and the response of ports. Special emphasis on the container revolution, liquid natural gas transportation, and deep-water ports for supertankers. (Lec. 3)

#### **565 Cruise Ship Operations, Marketing, and Ports (3)**

Explores the many facets of the cruise ship industry from the points of view of social, management, and policy science. Designed to familiarize the student, utilizing an interdisciplinary approach, with the genesis, current status, and future roles of this dynamic industry. (Seminar) Pre: graduate standing, or seniors with permission of instructor.

#### **571 Marine Geography (3)**

The marine region as a unique complex of physical and cultural elements. The purpose is to analyze functional relationships within the region and to assess forms of regional organization and control. (Lec. 3)

#### **577 (or PSC 577) International Ocean Law (3)**

Principles of international law as they relate to ocean management problems. Jurisdiction in zones, such as territorial seas, exclusive economic zones, and the high seas will be examined, as well as the problems posed by zonal approaches to ocean-use management.

**578 International Ocean Organizations (3)**

International organizations involved in marine-related activities, including their planning, management, regulatory, and assistance functions. Attention to the impact of organizations on ocean management efforts in the developed and developing world. (Lec. 3) Pre: 577 or permission of instructor.

**582 Estuarine Management (3)**

Options, governing structures, and management techniques for estuarine areas are considered, with emphasis on field and laboratory exercises. (Lec. 3)

**586 Environmental Impact Assessment and Analysis (3)**

Focuses on environmental impact assessment and auditing methods for public and private projects. Emphasis on mitigation and mediation of project alternatives, public hearing processes, and developing project reports. (Lec. 3)

**589 Master's Project Research (3)**

Preparation of a major research paper for M.M.A. students under the guidance of a graduate faculty member. (Independent Study) Pre: graduate standing in the M.M.A. program. S/U credit.

**591, 592 Directed Study or Research (3 each)**

Areas of special research interest of graduate students. (Independent Study) Pre: permission of chairperson.

**595 Problems of Modernization in Developing Nations**

See Resource Economics 595.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**602 Federal Ocean Policy and Organization (3)**

Ocean policy development and implementation by the executive and legislative branches of government. Allocation of powers and analysis of the decision-making process for the oceans. (Lec. 3)

**651, 652 Marine Affairs Seminar (3 each)**

Interdisciplinary seminar conducted by marine affairs program faculty supplemented by guest speakers from industry and government. Focuses on problems of marine resources development and management at the local, state, national, and international policy levels. (Seminar)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. Maximum of 6 credits of 699 may be taken prior to completing approved dissertation proposal. (Independent Study) S/U credit.

**Marine and Environmental Topics****Animal and Veterinary Science (AVS)**

- 101 Introduction to Animal Science
- 323, 324 Animal Management I, II
- 331 Anatomy and Physiology
- 333 Anatomy and Physiology Laboratory
- 412 Animal Nutrition
- 472 Physiology of Reproduction

**Anthropology (APG)**

- 413 Peoples of the Sea

**Aquaculture and Fisheries Science (AFS)**

- 101 Freshman Inquiry into Fisheries and Aquaculture
- 102 Introductory Aquaculture
- 201 Shellfish Aquaculture
- 202 Finfish Aquaculture
- 211 Introduction to the Marine Environment Laboratory
- 270 Basic Scuba Diving in Science and Technology
- 290 Small Boats: Their Equipment and Operation
- 315 Living Aquatic Resources
- 316 Living Aquatic Resources Laboratory
- 321 World Fishing Methods
- 341 Marine Propulsion Systems
- 342 Marine Auxiliary Systems
- 343 Vessel Repair and Maintenance
- 352 General Genetics
- 355 Genetics Laboratory
- 380 Inshore and Coastal Navigation
- 381 Mid-Ocean Navigation
- 390 Vessel Operations
- 400 Diseases of Cultured Fish
- 401 Pathobiology
- 415 Fishery Science
- 416 Fishery Science Laboratory
- 421 Design of Fish Capture Systems
- 425 Aquaculture and the Environment
- 432 Marine Finfish Aquaculture
- 433 Research Diving Methods
- 476 Genetics of Fish
- 481 Shellfish Aquaculture Laboratory
- 483 Salmonid Aquaculture
- 486 Applied Physiology of Fish
- 501, 502 Seminar
- 510 Applied Problems in Marine Fisheries Ecology
- 508 Seminar in Biological Literature
- 516 Early Life History of Aquatic Animals
- 521 Evaluation of Fish Capture Systems
- 531 Fish Stock Assessment
- 532 Experimental Design
- 534 Animal Virology
- 536 Virology Laboratory
- 555, 556 Pathology Rotation
- 581 Current Topics in Molluscan Aquaculture
- 584 Advanced Aquaculture Systems
- 586 Fish Nutrition

**Biological Sciences (BIO)**

- 101, 102 Principles of Biology I, II
  - 130 Topics in Marine Biology
  - 141 Introduction to the Biology of Marine Animals
  - 262 Introductory Ecology
  - 286 Humans, Insects, and Disease
  - 345 Marine Environmental Physiology
  - 355 Marine Invertebrates of Southern New England
  - 360 Marine Biology
  - 418 Marine Botany
  - 441 Environmental Physiology of Animals
  - 442 Mammalian Physiology
  - 445, 545 Endocrinology I, II
  - 455 Marine Ecology
  - 457 Marine Ecology Laboratory
  - 458 Freshwater Ecology
  - 460 Advanced Population Biology
  - 465 Biology of Algae
  - 466 Vertebrate Biology
  - 467 Animal Behavior
  - 501 Systematic Zoology
  - 524 Methods in Plant Ecology
  - 541 Comparative Physiology of Marine Animals
  - 560 Seminar in Plant Ecology
  - 561 Behavioral Ecology
  - 562 Seminar in Behavioral Ecology
  - 563 Ichthyology
  - 567 Natural Selection
  - 568 Ornithology
  - 570 Field Biology of Fishes
  - 664 Phytoplankton Ecology
  - 675 Advanced Ecology Seminars
- Chemical Engineering (CHE)**
- 212 Chemical Process Calculations
  - 403, 404 Introduction to Ocean Engineering Processes I, II
  - 534 Corrosion and Corrosion Control
  - 535 Advanced Course in Corrosion
  - 548 Separations for Biotechnology
- Civil and Environmental Engineering (CVE)**
- 374 Environmental Engineering
  - 375 Environmental Engineering Laboratory
  - 470, 471 Water and Wastewater Transport Systems I, II
  - 474 Water Quality Sampling and Analysis
  - 475 Water in the Environment
  - 478 Hazardous Waste Disposal and Solid Waste Management
  - 485 Environmental Engineering Geophysics
  - 570 Sanitary Chemistry
  - 572 Biosystems in Sanitary Engineering
  - 573 Theory of Water Purification and Treatment
  - 581 Experimental Geomechanics
  - 583 Advanced Foundation Engineering
  - 587 Groundwater Flow and Seepage Pressures
  - 588 Groundwater Hydrology
  - 672 Water Pollution Control and Treatment of Wastewater
  - 677 Stream and Estuarine Analysis
  - 681, 682 Advanced Geotechnical Engineering I, II

**Community Planning (CPL)**

- 300 Introduction to Global Issues in Sustainable Development
- 434 Introduction to Environmental Law
- 487 International Development Internships
- 495 International Development Seminar
- 511 Planning and Natural Environmental Systems
- 538 Site Planning
- 539 Environmental Law
- 545 Land Development Seminar
- 549 Seminar in Ecological Planning

**Economics (ECN)**

- 415 Environmental Harms and Sanctions

**Entomology (ENT)**

- 390 Wildlife and Human Disease
- 411, 511 Pesticides and the Environment
- 529 Systems Science for Ecologists
- 544 Insect Pest Management
- 561 Aquatic Entomology

**Environmental Sciences (EVS)**

- 101 Freshman Inquiry into Environment and Life Sciences
- 366 Communicating Environmental Research and Outreach (2)

**Geosciences (GEO)**

- 100 Environmental Geology
- 103 Understanding the Earth
- 210 Landforms: Origin and Evolution
- 277 Coastal Geologic Environments
- 301 Earth's Depleting Resources
- 450 Introduction to Sedimentary Geology
- 482 Innovative Subsurface Remediation Technologies
- 483 Hydrogeology
- 484 Environmental Hydrogeology
- 485 Environmental Engineering Geophysics
- 515 Glacial Geology
- 550 Sedimentary Processes and Environments
- 568 Isotopes in Hydrogeology
- 577 Coastal Geologic Hazards
- 582 Innovative Subsurface Remediation Technologies
- 583 Ground-Water Modeling
- 584 Environmental Hydrogeology

**History (HIS)**

- 389 Exploration, Commerce, Conflict in Atlantic World, 1415-1815
- 390 The Atlantic World in the Age of Iron, Steam and Steel
- 396 Maritime History/Underwater Archaeology Field School

**Landscape Architecture (LAR)**

- 343, 344 Landscape Architecture Studio I, II
- 443 Planting Design
- 445 Landscape Architecture Studio IV

**Marine Affairs (MAF)**

- 100 Human Use and Management of the Marine Environment
- 120 New England and the Sea

- 220 Introduction to Marine and Coastal Law
- 312 The Politics of the Ocean
- 320 Shipping and Ports
- 330 World Fishing
- 410 Senior Seminar in Marine Affairs
- 413 Peoples of the Sea
- 415, 515 Marine Pollution Policy
- 461 Coastal Zone Management
- 465 Island Ecosystem Management
- 472 Marine Recreation and Tourism Management Seminar
- 475 Human Responses to Coastal Hazards and Disasters
- 482 Quantitative Methods in Marine Affairs
- 484 Environmental Analysis and Policy in Coastal Management
- 490 Field Experience in Marine Affairs
- 502 Research Methods in Marine Affairs
- 511 Ocean Uses and Marine Sciences
- 512 Marine Science and Policy Analysis
- 516 Seminar on the Urban Waterfront
- 521 Coastal Zone Law
- 523 Fisheries Law and Management
- 530 International and Domestic Coastal Area Management Seminar
- 544 Water Resources Law
- 562 Admiralty Law
- 563 Maritime Transportation
- 564 Port Operations and Policy
- 565 Cruise Ship Operations, Marketing, and Ports
- 577 International Ocean Law
- 578 International Ocean Organizations
- 582 Estuarine Management
- 586 Environmental Impact Assessment and Analysis
- 602 Federal Ocean Policy and Organization
- 651, 652 Marine Affairs Seminar

**Mechanical Engineering and Applied Mechanics (MCE)**

- 354 Fluid Mechanics
- 415 Experimentation in Fluid Mechanics and Thermal Science
- 551 Fluid Mechanics I

**Microbiology (MIC)**

- 102 Exploring the Microbial World
- 201 Introductory Medical Microbiology
- 211 Introductory Microbiology
- 306 Eukaryotic Microbiology/Protistology
- 413-16 Advanced Microbiology

**Natural Resources Science (NRS)**

- 100 Natural Resource Conservation
- 101 Freshman Inquiry into Natural Resources
- 186 Analysis and Presentation of Environmental Data
- 200 Seminar in Natural Resources
- 212 Introduction to Soil Science
- 301 Introduction to Forest Science
- 302 Fundamentals of Forest Management
- 304 Field Ornithology

- 305 Principles of Wildlife Ecology and Management
- 309 Wildlife Management Techniques Laboratory
- 312 Methods in Soil and Water Analysis
- 324 Biology of Mammals
- 351 Soil Morphology Practicum
- 361 Watershed Hydrology and Management
- 395 Research Apprenticeship in Natural Resources Science
- 397 Natural Resources Internship
- 402 Wildlife Biometrics
- 403 Wildlife Biometrics Field Investigations
- 406 Wetland Wildlife
- 407 Nongame and Endangered Species Management
- 408 Environmental Education: Theory and Experiential Learning
- 409 Concepts in GIS
- 410 Fundamentals of GIS
- 412 Soil-Water Chemistry
- 415 Remote Sensing of the Environment
- 423 Wetland Ecology
- 424 Wetlands and Land Use
- 425, 525 Wetland Field Investigations
- 426 Soil Microbiology
- 430 Forest Resource Management
- 440 Ecosystem Processes in Land and Water Management
- 441 Methods in Ecosystem Analysis
- 450 Soil Conservation and Land Use Investigations
- 451 Soil and Water Conservation Technology
- 452 Soil, Water and Land Investigations
- 471 Soil Morphology and Mapping
- 475 Plant Nutrition and Soil Fertility
- 495 Advanced Natural Resources Apprenticeship
- 497 Natural Resources Cooperative Internship
- 498 Teaching Practicum in Natural Resources Science
- 499 Senior Thesis in Natural Resources Science
- 503 Wildlife Biometrics Field Investigations
- 505 Biology and Management of Migratory Birds
- 509 Concepts of GIS and Applications in Environmental Science
- 510 Soil-Water Relations
- 516 Advanced Remote Sensing
- 520 Quantitative Techniques in Natural Resource Research
- 522 Advanced GIS Analysis of Environmental Data
- 524 Application of Advanced Spatial Analysis
- 526 Microbial Ecology of Soils and Sediments
- 532 Conservation Biology and Resource Economics
- 533 Landscape Pattern and Change
- 534 Ecology of Fragmented Landscapes
- 538 Physiological Ecology of Wild Terrestrial Vertebrates
- 555 Applied Coastal Ecology
- 567 Soil Genesis and Classification
- 568 Recent Advances in Natural Resources Science
- 582 Seminar in Soil Ecology and Biochemistry
- 600 Graduate Seminar in Natural Resources

**Ocean Engineering (OCE)**

- 101 Introduction to Ocean Engineering
- 215, 216 Ocean Engineering Design I, II
- 301 Fundamentals of Ocean Mechanics
- 307 Intro. to Eng. Wave Mechanics and Littoral Processes
- 310 Basic Ocean Measurement
- 311 Coastal Measurements and Applications
- 416 Ocean Engineering Professional Practice
- 421 Marine Structure Design
- 422 Offshore Structure and Foundation
- 425 Coastal Experiments
- 471 Underwater Acoustics
- 472 Sonar Systems Design
- 495, 496 Ocean Systems Design Project I, II
- 510 Engineering Ocean Mechanics
- 514 Engineering Wave Mechanics and Nearshore Processes
- 515 Marine and Vehicle Hydrodynamics
- 522 Dynamics of Waves and Structures
- 560 Introduction to Data Collection Systems
- 561 Introduction to the Analysis of Oceanographic Data
- 565 Ocean Laboratory I
- 571, 672 Underwater Acoustics I, II
- 572 Underwater Acoustic Transducers
- 575 Marine Bioacoustics
- 582 Seabed Geotechnics
- 605, 606 Ocean Engineering Seminar
- 661 Analysis of Oceanographic Data Systems
- 673 Advanced Course in Underwater Acoustic Propagation

**Oceanography (OCG)**

- 110 The Ocean Planet
- 123 Oceans, Atmospheres, and Global Change
- 131 Volcanoes and the Environment
- 401 General Oceanography
- 451 Oceanographic Science
- 480 Introduction to Marine Pollution
- 491 Ocean Studies
- 501 Physical Oceanography
- 505 Marine Analytical Chemistry
- 510 Descriptive Physical Oceanography
- 517 Foundations in Earth System Dynamics
- 521 Chemical Oceanography
- 523 Organic Geochemistry of Natural Waters
- 531 Synoptic and Dynamic Meteorology
- 533 Graduate Writing in Marine and Environmental Sciences
- 540 Geological Oceanography
- 561 Biological Oceanography
- 574 Biology of Marine Mammals
- 576 Marine Microbiology
- 580 Introduction to Marine Pollution
- 605 Dynamical Oceanography
- 610, 611 Geophysical Fluid Dynamics I, II
- 613 Waves
- 614 Tides
- 620 Chemical Distributions
- 623 Physical Chemistry of Seawater
- 625 Organic Geochemistry of Sediments

- 628 High-Temperature Geochemistry
- 631 Seminar in Marine and Atmospheric Chemistry
- 640 Marine Particles
- 643 Subduction Zones
- 645 Petrology of the Ocean Crust
- 652 Marine Geophysics
- 661 Phytoplankton Taxonomy
- 663 Phytoplankton Physiology
- 664 Phytoplankton Ecology
- 665 Marine Bio-Optics and Remote Sensing
- 666 Zooplankton
- 668 Productivity of Ocean Margins
- 669 Marine Fish Ecology and Production
- 670 Fish Population Dynamics
- 671 Marine Zooplankton Ecology
- 679 Animal Communication
- 689 Coastal Marine Ecosystems
- 695 Seminar in Oceanography
- Physical Education and Exercise Science (PEX)**
- 346 Skin and Scuba Diving, Beginners
- 347 Skin and Scuba Diving, Advanced
- Philosophy (PHL)**
- 454 Philosophy of the Natural Environment
- Physics (PHY)**
- 425 Acoustics
- 483, 484 Laboratory and Research Problems in Physics

**Plant Sciences (PLS)**

- 150 Plant Biology for Gardeners
- 200 Introduction to Plant Protection
- 205, 305 Population, Environment, and Plant Biology I, II
- 222 Ecology of the Home Landscape
- 306 Landscape Management and Arboriculture
- 361 Weed Science
- 401, 402 Plant Sciences Seminar
- 405 Propagation of Plant Materials
- 407 Environmental Education: Theory/Experiential Learning
- 436 Floriculture and Greenhouse Crop Production
- 440 Diseases of Turfgrasses, Trees, Shrubs, and Ornamental Shrubs
- 441 Plant Disease Laboratory
- 442 Advanced Turf Management
- 475 Plant Nutrition and Soil Fertility
- 476 Environmental Plant Physiology
- 501, 502 Graduate Seminar in Plant Sciences
- 512 Plant Growth and Development
- 572 Plant Biochemistry
- 576 Environmental Plant Physiology
- Political Science (PSC)**
- 402 Environmental Policy and Politics
- Resource Economics (REN)**
- 105 Introduction to Resource Economics
- 310 Economics for Environmental Resource Management and Policy
- 345 International Trade and the Environment
- 410 Fish and Wildlife Economics
- 432 Environmental Economics and Policy
- 435 Aquacultural Economics

- 440 Benefit-Cost Analysis
- 441 Markets, Trade and natural Resources
- 501 Graduate Seminar in Natural Resources Economics
- 502 Research Methodology in Environmental and Natural Resource Economics
- 514 Economics of Marine Resources
- 528 Microeconomic Theory
- 529 Game Theory
- 534 Economics of Natural Resources
- 535 Environmental Economics
- 543 Economic Structure of the Fishing Industry
- 576 Econometrics
- 602 Research Methodology
- 624 Dynamic Economic Models
- 628 Advanced Microeconomic Theory I
- 630 Resource Analysis
- 634 Economics of Resource Development
- 676 Advanced Econometrics
- 677 Econometric Applications in Resource Economics
- Statistics (STA)**
- 413 Data Analysis
- 550 Ecological Statistics

*Special Problems, Directed Study, Independent Study, Workshop, and/or Internships are also offered by most Marine and Environmental departments.*

**Marketing (MKT)**

Dean: Professor Mazze

**301 Marketing Principles (3)**

An introduction to marketing from a managerial viewpoint. Examines social, economic, technological, legal, ethical, and other environmental factors and their impact on product, price, promotion, and distribution decisions in a worldwide market. (Lec. 3) Proficiency test available if course was taken at a non-AACSB program prior to transfer to the University.

**311 Consumer Behavior (3)**

A review of the consumer decision-making process and factors that influence consumers, including ethical issues. Implications for cross-cultural marketing are examined. (Lec. 3) Pre: 301 or concurrent enrollment.

**315 Marketing Research (3)**

Describes the nature and scope of marketing research activities. Reviews research designs, sampling, measurement, analysis, and other issues with focus on providing marketing information to management. (Lec. 3) Pre: BAC 202 or equivalent and MKT 301 or concurrent enrollment.

**321 Social Issues in Marketing (3)**

Functioning of the market in an affluent society. Effect of marketing decisions by firms placed in the perspective of the collective interest of all participants in society. (Lec. 3) Pre: 301 or permission of instructor.

**331 Fundamentals of Advertising (3)**

Condensed but comprehensive introduction to advertising. Basic for advanced study of specific phases of advertising. (Lec. 3) Pre: 301 or permission of instructor.

**341 Professional Selling (3)**

Fundamentals of the selling process with emphasis on sales theory, selling techniques, ethics of selling, and the salesperson's role in the marketing process. (Lec. 3) Pre: 301 or permission of instructor.

**405 Marketing Communications (3)**

The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations, and publicity are surveyed. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit.

**406 Product Innovation and Strategy (3)**

Development and management of new and existing products and services from a decision making perspective. Emphasis on value creation through the development of innovative products and services. (Lec. 3) Pre: 301. Not for M.B.A. graduate credit.

**407 Channels of Distribution (3)**

Functions of distribution channels in society with emphasis on forces which shape their configuration and efficiency. Study of channel management with focus on channel development, control, policy, and practice. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit.

**409 Marketing Policy and Problems (3)**

Summary course, with emphasis on decision making in all marketing areas and on use of the case method. (Seminar) Pre: 301, 315, and one 400-level marketing course. Not for graduate credit.

**434 Advertising Strategy and Management (3)**

Analysis and development of advertising strategies and campaigns. Uses skills from advertising, consumer behavior, marketing research, and other marketing courses. (Lec. 3) Pre: 331, 415, or permission of instructor. Not for M.B.A. graduate credit.

**442 Customer Relationship Management (3)**

Planning, organization, and control relationship activities, including sales techniques and strategies, development and management of sales organizations and distribution channels, and emerging technologies. (Lec. 3) Pre: 301. Not for M.B.A. graduate credit.

**445 Direct Marketing (3)**

An introduction to direct marketing strategy and techniques. Topics include databases, electronic media, direct mail, catalogs, direct response advertising, telemarketing, and the role of direct marketing in the marketing mix. (Lec. 3) Pre: 301. Not for M.B.A. graduate credit.

**451 Global Marketing (3)**

Focus on understanding how cultural, political, economic, legal and other macrofactors affect market strategies. Application of these factors in dealing with planning and organizing for global marketing operations. (Lec. 3) Pre: 301 or equivalent. Not for M.B.A. graduate credit.

**461 Special Topics in Marketing (3)**

Selected topics of current interest in marketing. (Lec. 3) Pre: 301. Not for graduate credit.

**491, 492 Directed Study (1–3 each)**

Independent study supervised by department faculty. Seminar meetings concerned with specific marketing topics. (Independent Study) Pre: 301 and one 400-level marketing course. Not for graduate credit.

**493 Internship in Marketing (3)**

Approved, supervised work experience with participation in management and problem solving related to marketing. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in marketing. S/U only.

**611 Buyer Behavior (3)**

Analysis of major factors influencing the behavior and demand of consumers. Emphasis on using these factors to identify and segment target markets and to assess the effects of these factors on markets. (Lec. 3) Pre: 601 or permission of instructor.

**615 Marketing Research (3)**

Marketing information needs and appropriate means of providing the requisite information are analyzed. Several major marketing decision areas and their research implications are examined in depth. (Lec. 3) Pre: 601, BAC 520 and 530, ECN 590, or permission of instructor.

**651 International Marketing Management (3)**

Marketing policy making for the multinational firm; organizing for international marketing; its opportunities, pricing, channels, promotion, and research. (Lec. 3) Pre: 601 or permission of instructor.

**661 Product Management (3)**

Development of product policies and strategies. Emphasis on organizing the marketing function to deal with various product-related activities including new product development, life cycle strategies, and product deletion. (Lec. 3) Pre: 601 or permission of instructor.

**691, 692 Directed Study in Marketing (1–3 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**695 Seminar in Marketing (3)**

Preparation and presentation of papers on selected topics in marketing. (Seminar) Pre: 601 or permission of instructor.

**697 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

## Master's in Business Administration (MBA)

Dean: Professor Mazze

**500 (BAC 530) Statistical Methods for Management (3)**

Introductory statistical methods applied to business problems. Topics include descriptive statistics, probability, distributions, inference, regression analysis, chi-square analysis, and introduction to time series. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only. Pre: BAC 520 or permission of instructor.

**502 (MGT 695) Managerial Skills Development (3)**

Assessment, feedback, and development of managerial skills; leadership, group decision making and problem solving, negotiation, making presentations, giving feedback, listening. (Lec. 3) Pre: MGT 630.

**503 (ACC 610) Financial Accounting (3)**

Covers basic accounting principles, accounting systems design, and financial reporting issues. Focusing on financial statement analysis techniques necessary to accurately assess a company's financial position and results of operations. (Lec. 3) Pre: BAC 520, MBA 500

**504 (FIN 601) Financial Management (3)**

Functions and responsibilities of financial managers. Examination of: Financial statement analysis, cost of capital, capital structure, valuation, markets, capital budgeting, working capital, mergers, bankruptcy multinational finance. (Lec. 3) Pre: BAC 520 (or equivalent), MBA 500, 501, 503

**505 (MKT 601) Managerial Marketing (3)**

Analysis of marketing problems and determination of marketing policies in product development, promotion, pricing, channel selection; legal aspects.



(Lec. 3) Pre: BAC 520 and 530 (or equivalent), MBA 500, or permission of instructor.

### 510 (ACC 611) Managerial Accounting (3)

Determination of accounting information for the purposes of decision making, control, and evaluation with emphasis on decision models using accounting information. (Lec. 3) Pre: 500, 503, BAC 520.

### 520 (MSI 620) Quantitative Methods for Management (3)

Survey of principal operations research/management science models. Linear programming, network, and other mathematical programming models; simulation, decision analysis, and other probabilistic models. (Lec. 3) Pre: BAC 500, 520, and MBA 500 or waiver examinations.

### 530 (BSL 600) Legal Environment of Business (3)

Coverage includes both substantive and procedural rules of law in the civil and administrative law field with emphasis on business, regulation, societal, and ethical issues. (Lec. 3) Pre: graduate standing.

### 540 (MGT 696) Strategic Decision Making (3)

Development of the skills and competencies in strategic thinking; use of critical analysis in the diagnosis of organizational and management problems. Serves as foundation for policy course and case method. (Lec. 3) Pre: graduate standing.

### 550 (MIS 600) Managing with Information Resources (3)

Concepts of information technologies and systems as they relate to the information-age organization. Major focus is on how the various information resources can be managed to facilitate organizational effectiveness. Topics include information and communication technologies, decision support and information systems, technology-enabled process re-engineering, and information architecture. (Lec. 3) Pre: BAC 500 or permission of instructor

### 560 (MSI 640) Operations Management (3)

The management of manufacturing and service operations. Topics include flow processes, inventories, scheduling, capacity, and operations strategy. (Lec. 3) Pre: BAC 500, 520, MBA 500.

### 570 (FIN 660) Managerial Economics (3)

The applications of economic theory and methodology to business problems. (Lec. 3) Pre: FIN 601, MBA 520, 550, and 560.

### 590 (MGT 681) Administrative Policy and Decision Making (3)

Case studies of management problems and evaluation of alternative solutions by integrating functional areas of business. Discussion of ethical, social, and regulatory environments in domestic and multinational firms. Includes the M.B.A. written comprehensive examination. (Lec. 3) Service learning. Pre: all M.B.A. 500-level first-tier courses or

equivalent and a minimum of 21 M.B.A. credits which must include MGT 630, MBA 503, 504, 505, or permission of instructor.

### 593, 594 (693, 694) Internship in Business Administration (3)

Participation in business administration under the field supervision of a sponsoring organization with evaluation by the College of Business Administration. (Independent Study) Pre: proposal approved by the College of Business Administration. S/U credit

## Mathematics (MTH)

*Chairperson:* Professor Pakula

### 010 Basic Math (3)

Real numbers; operation with fractions and decimals. Proportions and related problems. Basic algebra: solving first-degree equations and systems of equations. Applications. (Lec. 3) S/U only. Credits may not be used toward the minimum credits required for graduation or for general education.

### 099 Basic Algebra and Trigonometry (3)

Review of basic algebra and trigonometry: operations of real numbers and algebraic expressions, negative and fractional exponents, polynomials and fractional expressions, equations and systems of equations, inequalities, right triangle trigonometry and applications. (Lec. 3) For students not sufficiently prepared to take other mathematics courses. Credits may not be used toward the minimum credits required for graduation or for General Education. S/U only.

### 107 Introduction to Finite Mathematics (3)

Concepts and processes of modern mathematics concerned with sets, the theory of probability, and statistics. Role of these concepts in today's social and physical sciences. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. (M)

### 108 Topics in Mathematics (3)

Introduces the nonmathematics student to the spirit of mathematics and its applications. Presupposes no mathematical background beyond University admission requirements. Emphasis is on development of reasoning ability as well as manipulative techniques. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. (M)

### 111 Precalculus (3)

Equations of first and second degree, systems of equations. Inequalities. Functions and graphs. Exponential, logarithmic, and trigonometric functions. Applications. Introduction to analytic geometry. Complex numbers. Designed for students who need to strengthen their background in mathematics below calculus. (Lec. 3) Pre: passing a placement test. Not for credit for mathematics majors. (M)

### 131 Applied Calculus I (3)

Basic topics in calculus for students who do not need all the topics in 141. Limits, derivatives, and integrals of algebraic, logarithmic, and exponential functions. Applications including graphing, maxima and minima problems, etc. (Lec. 3) Pre: passing a placement test. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 141. (M)

### 132 Applied Calculus II (3)

Continuation of 131. Topics related to trigonometric functions, integration by parts and partial fractions, partial derivatives, infinite series. Applications to problems such as optimization, probability theory, simple differential equations. (Lec. 3) Pre: 131 or 141 or permission of chairperson. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 142. (M)

### 141 Introductory Calculus with Analytic Geometry (4)

Topics in analytic geometry, functions and their graphs, limits, the derivative, applications to finding rates of change and extrema and to graphing, the integral, and applications. (Lec. 3, Rec. 1) Completion of four units of high school mathematics, including trigonometry, recommended. Pre: passing a placement test. Not open to students with credit or concurrent enrollment in 131. (M)

### 142 Intermediate Calculus with Analytic Geometry (4)

Continues the study of calculus for the elementary algebraic and transcendental functions of one variable. Topics include the technique of integration, improper integrals, indeterminate forms, and calculus using polar coordinates. (Lec. 3, Rec. 1) Pre: 141 or permission of chairperson. Not open to students with credit or concurrent enrollment in 132. (M)

### 208 Mathematics for Elementary School Teachers (3)

Selected topics in mathematics central to the elementary school curriculum, including: problem solving; number systems; functions and relations; probability and statistics; geometry. (Lec. 3) Pre: admission to elementary education program and prior completion of General Education mathematics requirement. Not open to mathematics majors or mathematics education majors.

### 215 Introduction to Linear Algebra (3)

Detailed study of finite dimensional vector spaces, linear transformations, matrices, determinants and systems of linear equations. (Lec. 3) Pre: 131, 141, or equivalent.

### 243 Calculus for Functions of Several Variables (3)

Topics include coordinates for space, vector geometry, partial derivatives, directional derivatives, extrema, Lagrange multipliers, and multiple integrals. (Lec. 3) Pre: 142.

**244 Differential Equations (3)**

Classification and solution of differential equations involving one independent variable. Applications to the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. (Lec. 3) Pre: 243.

**307 Introduction to Mathematical Rigor (3)**

Introduction to the language of rigorous mathematics: logic, set theory, functions and relations, cardinality, induction, methods of proof. Emphasis on precise written and oral presentation of mathematical arguments. (Lec. 3) Pre: 141.

**316 Algebra (3)**

Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions, and Galois theory. (Lec. 3) Pre: 215.

**322 Concepts of Geometry (3)**

Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. (Lec. 3) Pre: 215 or permission of instructor.

**362 Advanced Engineering Mathematics I (3)**

Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. (Lec. 3) Pre: 142. Not for major credit in mathematics.

**363 Advanced Engineering Mathematics II (3)**

Laplace and Fourier transforms. Analytic functions. Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. (Lec. 3) Pre: 362 or equivalent. Not for major credit in mathematics.

**381 History of Mathematics (3)**

General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. (Lec. 3) Pre: 142 or equivalent.

**382 Number Theory (3)**

Some of the arithmetic properties of the integers including number theoretic functions, congruences, diophantine equations, quadratic residues, and classically important problems. (Lec. 3) Pre: 141 or permission of instructor.

**391 Special Problems (1-3)**

Advanced work under the supervision of a member of the and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

**393 Undergraduate Seminar (1)**

Preparation and presentation of selected topics in oral and written form. (Seminar) Pre: permission of chairperson.

**418 Matrix Analysis (3)**

Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. (Lec. 3) Pre: 215 or 362 or permission of instructor.

**420 Topics in Foundations (3)**

Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced viewpoint, selected from sets, logic, mathematical structures, number theory, geometry. Coordinated with EDC 520 for students taking both concurrently. (Lec. 3) Pre: 142 or permission of instructor. Not for major or minor credit in mathematics.

**425 Topology (3)**

Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. (Lec. 3) Pre: 243.

**435 Introduction to Mathematical Analysis I (3)**

Sets and functions, real topology, continuity and uniform continuity, derivatives, the Riemann integral, improper integrals. Detailed proofs emphasized. (Lec. 3) Pre: 243.

**436 Introduction to Mathematical Analysis II (3)**

Sequences and series of functions, implicit and inverse function theorems, topology of Euclidean space, transformation of multiple integrals. Detailed proofs emphasized. (Lec. 3) Pre: 435.

**437, 438 Advanced Calculus and Application I, II (3 each)**

Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. (Lec. 3) Pre: 243 for 437, 437 for 438.

**441 Introduction to Partial Differential Equations (3)**

One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Nonhomogeneous boundary value problems. Green's functions. (Lec. 3) Pre: 244 or 442.

**442 Introduction to Difference Equations (3)**

Introduction to linear and nonlinear difference equations; basic theory, z-transforms, stability analysis, and applications. (Lec. 3) Pre: 243.

**444 Ordinary Differential Equations (3)**

Introduction to fundamental theory of ordinary and functional-differential equations. Series and

numerical methods. Topics from stability, periodic solutions, or boundary-value problems. Applications to physics, engineering, biology. (Lec. 3) Pre: 244 or 362 or 442.

**447 (or CSC 447) Discrete Mathematical Structures (3)**

Concepts and techniques in discrete mathematics. Finite and infinite sets, graphs, techniques of counting, Boolean algebra and applied logic, recursion equations. (Lec. 3) Pre: junior standing or better in physical or mathematical sciences, or in engineering, or permission of instructor.

**451 Introduction to Probability and Statistics (3)**

Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations, some common distributions and elementary limit theorems. (Lec. 3) Pre: 243 or equivalent.

**452 Mathematical Statistics (3)**

Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. (Lec. 3) Pre: 451.

**456 Introduction to Random Processes (3)**

Conditional probability and expectation. Mean and covariance functions. Calculus of random processes. Introduction to Gaussian processes, Poisson processes, stationary processes, and Markov chains with applications. (Lec. 3) Pre: 451 or equivalent.

**461 Methods of Applied Mathematics (3)**

Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. (Lec. 3) Pre: 244 or 362 or 442.

**462 Functions of a Complex Variable (3)**

First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles, complex integration, conformal mapping and applications. (Lec. 3) Pre: 243 or equivalent.

**464 Advanced Engineering Mathematics III (3)**

Topics from Fourier series and integrals. Partial differential equations and boundary value problems. Bessel functions and Legendre polynomials. Conformal mappings. (Lec. 3) Pre: 362 and 363 or permission of instructor. Not for graduate credit in mathematics.

**471 Introduction to Numerical Analysis I (3)**

Interpolation, solution of nonlinear equations, numerical evaluation of integrals, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.

#### 472 Introduction to Numerical Analysis II (3)

Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.

#### 492 Special Problems (1–3)

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

#### 513 Linear Algebra (3)

Linear spaces and transformations, linear functionals, adjoints, projections, diagonalization, Jordan form of matrices, inner products; positive, normal, self-adjoint, and unitary operators; spectral theorem, bilinear and quadratic forms. (Lec. 3)

#### 515, 516 Algebra I, II (3 each)

Groups, rings, modules, commutative algebra. (Lec. 3) Pre: 316. In alternate years.

#### 525 Topology (3)

Topological spaces, separation properties, connectedness, compactness, uniformities. Function spaces, spaces of continuous functions, and complete spaces. (Lec. 3) Pre: 425 or equivalent. In alternate years.

#### 535, 536 Measure Theory and Integration (3 each)

Elements of topology and linear analysis. Lebesgue measure and integration in  $\mathbb{R}$ , in  $\mathbb{R}^n$ , and in abstract spaces. Convergence theorems. Bounded variation, absolute continuity, and differentiation. Lebesgue-Stieltjes integral. Fubini and Tonelli theorems. The classical Banach spaces. (Lec. 3) Pre: 435.

#### 545, 546 Ordinary Differential Equations I, II (3 each)

Existence and uniqueness theorems. Continuous dependence on parameters and initial conditions. Singularities of the first and second kinds, self-adjoint eigenvalue problems on a finite interval. Oscillation and comparison theorems. Introduction to delay and difference equations. Elements of stability theory of Lyapunov's second method. (Lec. 3) Pre: 435. In alternate years.

#### 547 (or CSC 547) Combinatorics and Graph Theory (3)

Enumeration: generating functions, recurrence relations, classical counting numbers, inclusion-exclusion, combinatorial designs. Graphs and their applications: Euler tours, Hamilton cycles, matchings and coverings in bipartite graphs, the four-color problem. (Lec. 3) Pre: 215 or equivalent. In alternate years.

#### 548 (or CSC 548) Topics in Combinatorics (3)

Topics such as Ramsey theory, Polya theory, network flows and the max-flow-mincut variations, applications in operations research; finite fields and

algebraic methods; block designs, coding theory, other topics. (Lec. 3) Pre: 547 or permission of instructor. In alternate years.

#### 550 Probability and Stochastic Processes (3)

Review of probability theory. Generating functions, renewal theory, Markov chains and processes, Brownian motions, stationary processes. (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years.

#### 551 Mathematical Statistics (3)

Theory of estimation and hypothesis testing. Large sample methods. Regression and analysis of variance. (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years.

#### 561 Advanced Applied Mathematics (3)

Linear spaces, theory of operators. Green's functions, eigenvalue problems of ordinary differential equations. Application to partial differential equations. (Lec. 3)

#### 562 Complex Function Theory (3)

Rigorous development of theory of functions. Topology of plane, complex integration, singularities, conformal mapping. (Lec. 3) Pre: 435 and 436 or 437 and 438 and permission of instructor. In alternate years.

#### 572 Numerical Analysis (3)

Further numerical methods of solution of simultaneous equations, partial differential equations, integral equations. Error analysis. (Lec. 3)

#### 575 Approximation Theory and Applications to Signal Processing

See Electrical Engineering 575.

#### 591, 592 Special Problems (1–3 each)

Advanced work under the supervision of a member of the department arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

#### 599 Master's Thesis Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### 629, 630 Functional Analysis I, II (3 each)

Banach and Hilbert spaces, basic theory. Bounded linear operators, spectral theory. Applications to analysis. Application to a special topic such as differential operators, semigroups and abstract differential equations, theory of distributions, or ergodic theory. (Lec. 3) Pre: 536 or permission of instructor.

#### 641 Partial Differential Equations I (3)

First order systems. The Cauchy-Kowalewsky theorem. The Cauchy problem. Classification of partial differential equations. Hyperbolic equations. Mainly the theory of the subject. Students interested in

techniques for the solution of standard equations should take 441. (Lec. 3) Pre: 215, 435, and 462. In alternate years.

#### 642 Partial Differential Equations II (3)

Elements of potential theory. Elliptic equations. Green's function. Parabolic equations. Introduction to the theory of distributions. (Lec. 3) Pre: 641. In alternate years.

#### 691, 692 Special Topics I, II (3 each)

Advanced topics of current research in mathematics will be presented with a view to expose the students to the frontiers of the subject. (Independent Study) Pre: permission of chairperson.

#### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### 930 Workshop in Mathematics Topics for Teachers (0–3)

Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Not for degree credit.

## Mechanical Engineering and Applied Mechanics (MCE)

Chairperson: Professor Shukla

#### 201 Graphics for Mechanical Engineering (3)

Introduction to the principles of graphic representation in mechanical design, with emphasis on computer-aided drafting, orthographic projection, isometric and auxiliary views, sections, dimensioning. (Lec. 2, Lab. 3)

#### 262 Statics (3)

Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis are developed. (Lec. 3) Pre: EGR 105 and MTH 141.

#### 263 Dynamics (3)

Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy and impulse-momentum principles. (Lec. 3) Pre: 262.

#### 301 Application of Mechanics in Design (3)

Concepts of engineering design, material selections, two- and three-dimensional stress analysis, failure theories, reliability concepts, fracture and fatigue, finite-element applications, and case studies. (Lec. 3) Pre: CVE 220 and concurrent registration in CHE 333.

**302 Design of Machinery (3)**

Analysis of mechanisms including linkages, gear trains, and cam-follower systems. Graphical and analytical synthesis techniques, computer-aided linkage design, and detailed design of linkages including bearing and material selection and sizing. (Lec. 3) Pre: 263 and 301.

**313 Introduction to Mechanical Engineering Experimentation (3)**

Report writing, computer-assisted data acquisition and control, statistical and other measures of data uncertainty, propagation of uncertainty, curve fitting. Introduces basic instrumentation for measuring pressure, temperature, velocity and strain. (Lec. 2, Lab. 3) Pre: EGR 106, PHY 205, CVE 220, 341 and concurrent registration in 354. Professor Lessmann's section is Writing Intensive. [WI]

**341 Fundamentals of Thermodynamics (3)**

Basic principles and laws of thermodynamics and their relation to pure substances, ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. First and Second Law application to engineering systems; power and refrigeration cycles. (Lec. 3) Pre: 263, MTH 243, and credit or concurrent enrollment in PHY 205.

**354 Fluid Mechanics (3)**

Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and nonviscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. (Lec. 3) Pre: 263, EGR 106, and MTH 244 or 461.

**366 System Dynamics (3)**

Systems analysis emphasizing control and vibration. Time and frequency domain techniques. Modeling of typical mechanical, hydraulic, pneumatic, and thermal systems. Transfer functions and block diagram methods. Elementary control laws. (Lec. 3) Pre: 372.

**372 Engineering Analysis I (3)**

Application of advanced mathematical methods and computer software to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. (Lec. 3) Pre: EGR 106, MTH 244, and junior standing.

**401 Mechanical System Design (3)**

Comprehensive design of mechanical systems ranging from consumer products to production machinery, addressing issues such as economic feasibility, and reliability. Utilization of CAD software, design problem formulation, and structure of the open-ended solution process. (Lec. 1, Lab. 4) Pre: 301, 302.

**402 Thermal Systems Design (3)**

Comprehensive projects using applied thermodynamics, including psychometrics, combustion, and chemical and phase equilibrium. Economic and environmental evaluation, simulation, and optimization of components such as heat exchangers, piping systems, and prime movers. (Lec. 3) Pre: 448.

**414 Mechanical Engineering Experimentation (3)**

Course aims to build on foundation from 313 and to apply experimental tools to topics from the two main emphasis areas in the undergraduate curriculum, mechanical systems and thermal systems. (Lec. 2, Lab. 3) Pre: 313 and concurrent registration in 448. Not for graduate credit.

**426 Advanced Mechanics of Materials (3)**

Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method. Torsion. (Lec. 3) Pre: CVE 301.

**431 Computer Control of Mechanical Systems (3)**

Use of computers to control mechanical systems. Advanced control algorithms. Computer-aided design methods. Digital control algorithms and software implementation. Interfacing and digital controller hardware. (Lec. 3) Pre: 366.

**434 Heating, Ventilation, and Air Conditioning (3)**

Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. (Lec. 3) Pre: 354 and 448.

**437 Turbomachinery Design (3)**

Application of the principles of thermodynamics and fluid mechanics to the design of rotating machinery such as turbines, compressors, centrifugal and axial flow pumps. (Lec. 3) Pre: 341 and 354.

**438 Internal Combustion Engines (3)**

Principles, design, and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburetion, cooling, supercharging, ignition, friction, and lubrication. Gasoline and diesel, two- and four-stroke cycles, and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 341.

**439 Applied Energy Conversion (3)**

Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. (Lec. 3) Pre: 448 or permission of instructor.

**440 Mechanics of Composite Materials (3)**

Introduction to the basic concepts of the mechanical behavior of composite materials. Analysis and performance of fiber-reinforced composites. Special design considerations and experimental characterization of composites. (Lec. 3) Pre: 314 and CVE 220, or permission of instructor.

**446 Metal Deformation Processes**

See Industrial and Manufacturing Engineering 446.

**448 Heat and Mass Transfer (3)**

Transfer of heat by conduction, convection, and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. (Lec. 3) Pre: 341 and 372. Not for graduate credit.

**449 Product Design for Manufacture**

See Industrial and Manufacturing Engineering 449.

**454 Tribology (3)**

Introductory course on the basic principles of tribology (friction, wear, lubrication); fundamentals of surface contact; friction theories; wear mechanisms; temperature considerations in sliding contacts; lubrication regimes; materials selection; design of bearings; advanced applications; experimental analysis. (Lec) Pre: Successful completion of CVE 220 and MCE 354.

**455 Advanced Fluid Mechanics (3)**

Continuation of 354. Selected topics in advanced fluid mechanics including potential flows, compressible flow, fluid machinery, and electric and magnetic field effects. (Lec. 3) Pre: 354.

**464 Vibrations (3)**

Elementary theory of mechanical vibrations, including the one-degree-of-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. (Lec. 3) Pre: 366 or permission of instructor.

**465 Experimental Mechanics (3)**

Theory and application of various experimental techniques used in solid mechanics such as acoustic emission, holography, interferometry, strain gauges, brittle coatings, and photoelasticity. (Lec. 2, Lab. 3) Pre: 314 and CVE 220.

**466 Introduction to Finite Element Method (3)**

Application of the finite element method to problems in mechanical engineering including plane elasticity, heat transfer, and fluid mechanics. Basic concepts, matrix formulation, interpolation functions, basic element types, and implementation to problem solution. (Lec. 3) Pre: 301 and 372.

**491, 492 Special Problems (1-6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit.

**501, 502 Graduate Seminar (1 each)**

Discussions, presentation of papers based on research, or detailed literature surveys. Attendance is required of all students in graduate residence. (Seminar) S/U credit.

**503 Linear Control Systems**

See Electrical Engineering 503.

**504 Optimal Control Theory**

See Electrical Engineering 504.

**506 Expert Systems for Mechanical Design and Manufacturing (3)**

Expert systems structure; knowledge bases, inference engines, and artificial intelligence languages. Applications to mechanical design and manufacturing problems. Graph theory and expert systems for mechanism design; features for design and manufacturing. (Lec. 3) Pre: 401 or equivalent.

**523 Advanced Kinematics I (3)**

Analytical kinematic and dynamic analysis of planar mechanisms, graph theory, topological synthesis, topological analysis, Burmester theory, mechanism design software. (Lec. 3) Pre: 302 or equivalent.

**530 Real-Time Monitoring and Control (3)**

Fundamentals of the development of real-time software for monitoring and control. Synchronous programming, timing, interrupt programming, operator's console control, and scheduling. Laboratory exercises. (Lec. 3) Pre: graduate standing or permission of instructor.

**532 Precision Machine Design (3)**

Fundamentals of design and the integration of precision mechanical components and machines. Quasi-static and dynamic errors, sensors, contact and noncontact bearings, power generation devices, and system integration. (Lec. 3) Pre: 401 or graduate standing.

**541 Advanced Thermodynamics I (3)**

Advanced study of classical thermodynamics with emphasis on basic concepts, laws, and thermodynamic relationships. Selected topics of current interest including areas of irreversible thermodynamics, statistical mechanics, and the thermodynamics of solids. (Lec. 3) Pre: 341 or permission of instructor.

**545 Heat Transfer (3)**

Conduction in two and three dimensions and conducting systems with radiation and fluid motion. Solutions obtained by mathematics, computer-numerical methods, and analog devices. (Lec. 3) Pre: 448.

**546 Convection Heat Transfer (3)**

Relationship between heat transfer and fluid flow with emphasis on the solution of governing equations by exact methods, integral methods, and similarity techniques. (Lec. 3) Pre: 448.

**549 Advanced Product Design for Manufacture**

See Industrial and Manufacturing Engineering 549.

**550 Theory of Continuous Media (3)**

Basic course for first-year graduate students which develops and unifies the laws of mechanics as ap-

plied to the behavior of continua. Application to solids and fluids. (Lec. 3) Pre: CVE 220, MCE 354, 372, or permission of instructor.

**551 Fluid Mechanics I (3)**

Basic treatment of real fluid flows using the continuum mechanics approach. Exact solutions of the governing equations. Laminar shear flows and boundary layer theory, turbulent transition. (Lec. 3) Pre: 354 or equivalent.

**561 Computational Methods in Solid Mechanics (3)**

Finite and boundary element methods based on variational and weighted residual concepts; practical implementation to field problems in elasticity, plasticity, and heat conduction. (Lec. 3) Pre: 372 and one graduate course in elasticity or heat conduction.

**562 Computational Methods in Fluid Flow and Heat Transfer (3)**

Computational techniques and applications for practical problems concerning multidimensional fluid flow, heat and mass transfer, and chemical reactions. (Lec. 3) Pre: undergraduate work in fluid mechanics and heat transfer or permission of instructor.

**563 Advanced Dynamics (3)**

Dynamics of a system of particles, Lagrange's equations from an advanced point of view. Variational methods, nonconservative and nonholonomic systems; matrix-tensor specifications of rigid body motions, normal coordinates. Hamilton's equation of motion, canonical transformation, Hamilton-Jacobi theory. (Lec. 3) Pre: 366 and 372 or equivalent.

**564 Advanced Vibrations (3)**

Theory of vibration of systems with concentrated masses and stiffness; systems with one degree of freedom, vibration isolation systems with many degrees of freedom, matrix methods, dynamic vibration absorbers, torsional vibration, approximate numerical methods. Experimental methods and design procedures. (Lec. 3) Pre: 464.

**565 Wave Motion and Vibration of Continuous Media (3)**

Wave motion and vibrations of strings, rods, beams, plates, and membranes; dynamic elasticity theory; Rayleigh surface waves; solutions using separation of variables and integral transforms. (Lec. 3) Pre: 372, 464, or equivalent.

**566 The Mechanics of Robot Manipulators (3)**

Detailed analysis of the kinematics, dynamics, and control of industrial-type robot manipulator systems. (Lec. 3) Pre: 302, 366, or permission of instructor.

**568 Theory of Plates**

See Civil Engineering 568.

**571 Theory of Elasticity I (3)**

Development of the basic field equations; generalized Hooke's law; general concepts of stress and strain; plane problems; stress functions; Saint Venant torsion and flexure; introduction to three-dimensional problems. (Lec. 3) Pre: CVE 220 or equivalent.

**576 Fracture Mechanics (3)**

Fundamentals of linear elastic fracture mechanics, stress analysis viewpoint, energy viewpoint, two-dimensional and three-dimensional problems, elastic-plastic considerations, and crack extension behaviors. (Lec. 3) Pre: 426 or permission of instructor.

**577, 578 Seminar in Sensors and Surface Technology (1)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**653 Fluid Mechanics II (3)**

Continuation of 551, including turbulent modeling, turbulent shear flows and boundary layers, incompressible irrotational flows, and selected topics such as an introduction to non-Newtonian fluid behavior, geophysical flows, or numerical methods. (Lec. 3) Pre: 551.

**666 Nonlinear Mechanics (3)**

Dynamics of nonlinear systems, free and forced oscillations; graphical methods, integral curves, singular points, limit cycles and stability. Van der Pol equation, perturbation methods, approximate methods, application to ecological systems. (Lec. 3) Pre: 564.

**671 Theory of Elasticity II (3)**

Continuation of 571, including advanced topics selected from: complex variable methods; displacement potentials and stress functions for three-dimensional problems; thermoelasticity; variational, approximate, and numerical methods; anisotropic solutions. (Lec. 3) Pre: 571.

**678 Micromechanics (3)**

Mechanics of material behavior from the microstructural viewpoint; mathematical modeling of inclusions, inhomogeneities, dislocations, granular and porous structures; constitutive equation development. Applications to metals, composites, ceramics, and other materials with microstructure. (Lec. 3) Pre: 571, materials background of CHE 333 or higher.

**679 Theory of Plasticity (3)**

Formulation and solution of inelastic material behavior, physical phenomena of yielding plastic flow, plastic stress-strain laws, yield criteria, plane problems, torsion, slip lines, limit analysis, creep. (Lec. 3) Pre: 571 or permission of instructor.

**680 Advanced Topics in Solid Mechanics (3)**

Advanced studies in the mechanics of solids with specific topics determined by current department interests. Designed for students with at least one year of previous graduate studies. (Lec. 3) Pre: permission of instructor. May not be repeated.

**691, 692 Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Medical Technology (MTC)**

Director: Adjunct Professor Paquette

**102 Introduction to Clinical Laboratory Science (1)**

An introduction to the health care and medical laboratory fields including specialty areas of medical laboratory science, professional organizations, credentialing, and the health care team approach. (Lec. 1)

*The clinical courses in medical technology (MTC 405–416) require senior standing and are open only to students who have been accepted into an affiliated hospital school of medical technology.*

**405 Pathophysiology (2)**

An introduction to pathology. The correlation between pathological processes and clinical symptoms and the course of disease is studied. (Practicum)

**406 Clinical Immunology (2)**

Formation, structure, and action of antigens and antibodies. Methods of immunization. The laboratory emphasizes serological procedures in the diagnosis of disease. (Practicum)

**407 Clinical Microscopy (2)**

Lectures and laboratory practice in the analyses of body fluids. (Practicum)

**409 Clinical Microbiology I (4)**

The relationship of bacteria and bacterial diseases of man, with emphasis on the application of procedures to medical diagnosis. Fungi, viruses, the rickettsias, and human parasites are also studied. (Practicum)

**410 Clinical Microbiology II (4)**

Continuation of 409. (Practicum)

**411 Clinical Chemistry I (4)**

The chemistry of body constituents and their relationship to diagnosis of human disease. Principles and methods of analysis are emphasized. (Practicum)

**412 Clinical Chemistry II (4)**

Continuation of 411. (Practicum)

**413 Immunohematology I (2)**

Instruction in drawing and processing blood and in ascertaining compatibility. Donor-recipient blood and tissue reactions are studied in detail. (Practicum)

**414 Immunohematology II (2)**

Continuation of 413. (Practicum)

**415 Hematology I (3)**

Morphology of the blood and blood-forming organs and the study of abnormalities associated with disease. The dynamics and diagnostic tests of hemostasis are also discussed. (Practicum)

**416 Hematology II (3)**

Continuation of 415. (Practicum)

**483 Introductory Diagnostic Microbiology**

See Microbiology 483.

**501 (or MIC 501) Advanced Clinical Microbiology I (3)**

Current methodology employed in the processing of clinical microbiology specimens, isolation and identification of pathogenic microorganisms, and determination of antimicrobial susceptibility. (Lec. 3) Pre: 409 or MIC 432 or equivalent.

**502 Advanced Clinical Chemistry I (3)**

The pathophysiologic mechanisms as they correlate to clinical chemistry data. Topics include mechanisms of pathology and analytical techniques. (Lec. 3) Pre: 411 or equivalent.

**510 Clinical Laboratory Management (3)**

Supervisory management principles applicable to the clinical laboratory. Includes the processes of supervision, decision making, job performance and evaluation, communications, organizational behavior, and labor relations in the modern laboratory. (Lec. 3) Pre: 400-level medical technology internship or equivalent.

**512 Special Problems in Clinical Laboratory Science (3)**

Assigned research on an advanced level. Students required to outline problem, conduct the necessary research or experimental work, and present observations and conclusions in a written and oral report. (Independent Study) Pre: 400-level medical technology internship or equivalent.

**513 (or MIC 513) Advanced Clinical Immunology (3)**

Theory, application, and techniques used in clinical immunology: immunochemistry, serology, immunohematology, immunopathology. (Lec. 3) Pre: 406 or MIC 533 or equivalent.

**520 Advanced Hematology (3)**

Special problems, advanced techniques, and methodology in hematology; laboratory approach emphasized. (Lec. 3) Pre: 415 or equivalent.

**530 Recent Advances in Blood Banking and Transfusion Medicine (3)**

Immunohematology, blood banking, and transfusion medicine with emphasis on recent advances. Techniques used for tissue typing and organ transplantation. (Lec. 3) Pre: 413 or equivalent.

**541 Advanced Clinical Microbiology II (3)**

Current research and clinical methodology in clinical mycology, parasitology, mycobacteriology, epidemiology, and infectious disease serology. (Lec. 3) Pre: 409 or MIC 432 or equivalent.

**543 Advanced Clinical Chemistry II (3)**

A comprehensive study of pathophysiologic mechanisms as they relate to clinical chemistry. Topics include immunochemistry, automation, enzymology, pharmacology, and endocrinology. (Lec. 3) Pre: 411 or equivalent.

**551 Topics in Biochemistry for the Clinical Scientist**

See Biochemistry 551.

*The clinical courses in cytopathology (MTC 561–566) require graduate standing and are open only to students who have been accepted into the Rhode Island School of Cytotechnology.*

**561 Introduction to Cytotechnology (3)**

A review of cell and tissue structure, principles of microscopy, and cytological staining methods; overview of organization and management of cytology labs. (Practicum)

**562 Special Topics in Cytotechnology (3)**

Special projects in cytology, cytopathology, or cytotechnology. Students will investigate or review a topic and present a written and oral report. (Practicum)

**563 Cytopathology (3)**

Cytopathology and clinical aspects of cervical dysplasia, carcinoma in situ, and invasive squamous cell carcinoma. Endometrial and endocervical carcinoma and other genital tract cancers will be considered. (Practicum)

**564 Medical Cytology (3)**

Benign and malignant cytology of the gastrointestinal, respiratory, and urinary tracts; study of exfoliative cells in urine, serious effusions, cerebrospinal fluid, and breast secretions. (Practicum)

**565 Cytology Practicum I (6)**

Microscopic evaluation and screening of benign cytological smears from cervical dysplasia, carcinoma in situ, and invasive malignant tumors of the female genital tract. (Practicum)

**566 Cytology Practicum II (6)**

Microscopic evaluation and screening of cytological smears from the gastrointestinal, urinary, respiratory, and central nervous systems and from other body fluids. (Practicum)

**571 (or APS 571) Biotechnology Product Evaluation and Development (3)**

The process through which candidate products produced using recombinant DNA technology are evaluated for safety and efficacy, including conductance of clinical trials, economic issues, and regulatory affairs. (Lec. 3) Pre: graduate standing and permission of chairperson.

**590 Special Problems in Clinical Chemistry (1–6)**

Intensive tutorial work, research, and readings in clinical chemistry. (Independent Study) Pre: graduate standing and permission of chairperson.

**591 Special Problems in Clinical Microbiology (1–6)**

Intensive tutorial work, research, and readings in clinical microbiology. (Independent Study) Pre: graduate standing and permission of chairperson.

**592 Special Problems in Hematology (1–6)**

Intensive tutorial work, research, and readings in hematology. (Independent Study) Pre: graduate standing or permission of chairperson.

**593 Special Problems in Immunohematology (1–6)**

Intensive tutorial work, research, and readings in immunohematology. (Independent Study) Pre: graduate standing and permission of chairperson.

**594 Special Problems in Biotechnology (3)**

Intensive tutorial work, research, and readings in biotechnology. (Independent Study) Pre: graduate standing and permission of chairperson.

**Microbiology (MIC)**

*Chairperson:* Professor Sperry

**102 Exploring the Microbial World (3)**

A guided tour of aquatic and disease-causing microorganisms, emphasizing their impact on humans. The role of microorganisms in evolution, environmental and human health, biotechnology, and natural product prospecting. (Lec. 3) (N)

**201 Introductory Medical Microbiology (4)**

Required of all students in nursing, dental hygiene, and pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. (Lec. 3, Lab. 3) Pre: one semester of biology and one year

of chemistry. Not open to students with credit in 211.

**211 Introductory Microbiology (4)**

Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences majors. (Lec. 3, Lab. 3) Pre: two semesters of biology, one semester of organic chemistry, which can be taken concurrently. Not open to students with credit in 201.

**306 Eukaryotic Microbiology/Protistology (3)**

Free-living and disease-causing eukaryotic microorganisms are examined in depth, with a focus on those causing human and animal diseases, inhabiting coastal/marine habitats, or used in research. (Lec. 3) Pre: two semesters of biology.

**333 Immunology and Serology (3)**

Introduction to the immune response; host resistance to infection; immunopathology; antibodies, antigens, and use of serological techniques. (Lec. 3) Pre: 201 or 211.

**334 Virology (3)**

An introduction to the basic aspects of virus structure, classification, and replication as these relate to viruses as agents of infectious disease. (Lec. 3) Pre: 201 or 211.

**401 Quantitative Cell Culture**

See Biochemistry 401.

**403 Introduction to Electron Microscopy**

See Biochemistry 403.

**405 (or BCH 405) Electron Microscopy Laboratory (2)**

Introduction to the practical aspects of electron microscopy. Emphasis on acquisition of the following skills: tissue preparation, ultramicrotomy, operations of the electron microscope, and darkroom procedures. (Lab. 6) Pre: credit or concurrent enrollment in 403.

**409 Marine Micrograzers (2)**

Practical experience with collection, cultivation and identification of diverse marine and coastal heterotrophic protists of the Phylum Ciliophora, using phase, fluorescence and electron microscopy, digital still micrography, videomicroscopy, genetic fingerprinting. (Lab. 4) Pre: two semesters of biology laboratory courses.

**412 Food Microbiology (3)**

Analysis of water and milk; examination of dairy and other food products. (Lec. 2, Lab. 4) Pre: 201 or 211 and one semester of biochemistry, which may be taken concurrently.

**413 Advanced Microbiology Lecture I (3)**

The physiology, genetics, developmental, and molecular biology of microorganisms. (Lec. 3) Pre:

211, credit or concurrent enrollment in BCH 311 and BIO 352, or permission of instructor.

**414 Advanced Microbiology Lecture II (3)**

The structural, developmental, and physiological diversity of microorganisms; symbiotic relationships, molecular basis of ecology, and the role of microorganisms in the soil and water environment. (Lec. 3) Pre: 211, credit or concurrent enrollment in BCH 311, or permission of instructor.

**415 Advanced Microbiology Laboratory I (2)**

Introduction to techniques and methods for advanced study of microbial genetics, physiology, molecular, and developmental biology of microorganisms. (Lab. 6) Pre: concurrent enrollment in 413 or permission of instructor.

**416 Advanced Microbiology Laboratory II (2)**

Techniques and methods for the advanced study of microorganisms with emphasis on the study of representative groups of microorganisms and the application of these techniques to soil and aquatic environments. (Lab. 6) Pre: concurrent enrollment in 414 or permission of instructor.

**421 Cell Biology and Cancer**

See Biochemistry 421.

**422 Biotechnology of Industrial Microorganisms**

See Nutrition and Food Science 422.

**432 Pathogenic Bacteriology (3)**

The more important microbial diseases, their etiology, transmission, diagnosis, and control. Laboratory, emphasis on methods of diagnosis. (Lec. 2, Lab. 3) Pre: 201 or 211 or one semester of organic chemistry.

**440 (or APS 440 or NUR 440) Public Health Practicum in Infectious Disease Control (3)**

Principles of and practical experience in prevention and control of emerging infectious diseases. (Practicum) Pre: BIO 101 or equivalent or permission of instructor.

**447 Experimental Cell Biology (2)**

Use of eukaryotic microorganisms as humane experimental models to analyze cell physiological processes such as endocytosis, motility, and secretion, using immunocytochemistry, biological assays, fluorescent probes, digital still and video imaging. (Lab. 4) Pre: two semesters of biology laboratory courses.

**451 Laboratory in Cell Biology**

See Biological Sciences 451.

**453 Cell Biology**

See Biological Sciences 453.

**483 (or MTC 483) Introductory Diagnostic Microbiology (3)**

Diagnosis of infectious diseases by use of microbiology, immunology, and hematology and clinical

chemical methods; organisms covered include viruses, bacteria, fungi, and parasites. (Lec. 2, Lab 2) Pre: 201 or 211. Open only to clinical laboratory science or microbiology majors or permission of instructor.

**491, 492 Research in Microbiology (1–6 each)**  
Special problems in microbiology. Student required to outline a problem, carry on experimental work, and present conclusions in a report. (Independent Study) Open only to seniors in microbiology. A maximum of 6 credits can be taken for major credit.

**495 Seminar in Microbiology (1)**  
Preparation and presentation of papers on selected subject in microbiology. (Seminar) S/U credit.

**499 Biotechnology Internship (3–12)**  
Professional field experience in biotechnology. The experience will be defined by a job description and learning contract arranged by the MIC internship coordinator, student intern, and relevant agency. (Practicum) Pre: junior or senior standing and approval by the MIC internship coordinator and department chairperson. A maximum of 12 credits can be taken as major credit. Not for graduate credit.

**501 Advanced Clinical Microbiology I**  
See Medical Technology 501.

**502 (or BCH 502) Techniques of Molecular Biology (2)**  
Basic techniques of molecular biology used in the study of gene structure and function including DNA/RNA and plasmid isolation, northern and southern blotting, PCR and gene cloning, among others. (Lab. 6) Pre: BIO 437 or permission of instructor.

**503 (or BCH 503) Electron Microscopy (2)**  
Biological specimen preparation techniques for transmission and scanning electron microscopy. Includes thin sectioning, negative staining, shadow-casting, freeze-etching, cytochemistry, principles of electron microscope operation. Final written and oral reports. (Lec. 2) Pre: graduate standing or permission of instructor. Not open to students with credit in 403.

**505 (or BCH 505) Laboratory in Electron Microscopy (3)**  
Introduction to biological sample preparation for transmission and scanning electron microscopy. Tissue preparation, ultramicrotomy, operation of the electron microscope, darkroom procedures, particulate and molecular sample preparation, critical point drying, sputtercoating. Not open to students who have taken 405. (Lab. 6) Pre: graduate standing or permission of instructor.

### **506 Biology of Eukaryotic Microorganisms/Protists (3)**

The biology of free-living and parasitic eukaryotic microorganisms is explored, with an emphasis on systematics, evolution, cell physiology, development, reproduction and molecular biology of those species most commonly used in research at the present time. (Lec. 3) Pre: two semesters of biology.

**508 Seminar in Biological Literature**  
See Biological Sciences 508.

**513 Advanced Clinical Immunology**  
See Medical Technology 513.

### **514 The Electron Microscope in Molecular and Cellular Biology (2)**

Use of the electron microscope to analyze structure and function of biological molecules. Applications in food science, pathology, pharmacology, ecology, gene engineering, and basic research. (Lec. 2) Pre: BCH 311 and BIO 352 or permission of instructor. In alternate years. Next offered spring 2004.

### **521 (or BIO 521) Recent Advances in Cell Biology (2)**

Reading of current papers in the area of cell biology and preparation of written and oral reports. Emphasis on animal cells. (Lec. 2) Pre: at least one of the following courses or an equivalent course emphasizing cell structure and function—BIO 327, 432, 445, 453, and MIC 421; graduate standing or permission of instructor. May be repeated for a maximum of 4 credits.

### **523 (or NFS 523 or NRS 523) Water Pollution Microbiology (3)**

The microbiological aspects of water pollution, including the potential for infectious diseases, pollution effects on microbial ecosystems, and the microbial degradation of pollutants. (Lec. 3) Pre: 201 or 211, BCH 311, or permission of instructor. Credit or concurrent enrollment in 525.

### **525 (or NFS 525) Water Pollution Microbiology Laboratory (1)**

Experimental method for pollution analysis, microbial indicator assay methods, microbial assays, sample collection and statistical treatment of data. (Lab. 3) Pre: concurrent enrollment in 523 or permission of instructor.

### **533 Immunology (3)**

Introduction to the cellular, molecular, and genetic basis of the immune system, and the role of the immune system in immunity to infection, tumor and transplantation immunobiology, and immunopathology. (Lec. 3) Pre: 201 or 211.

### **534 Animal Virology**

See Aquaculture and Fisheries Science 534.

### **535 Virology Laboratory**

See Aquaculture and Fisheries Science 536.

### **538 Epidemiology of Viral and Rickettsial Diseases**

See Aquaculture and Fisheries Science 538.

### **552 (or BCH 552) Microbial Genetics (3)**

Recent research on the mechanism of mutation, genetic recombination, the genetic code, transposons, regulations, genetic engineering and regulation of DNA, RNA, and protein synthesis in microbial systems. (Lec. 3) Pre: 201, BIO 352, and BCH 311.

### **561 Recent Advances in Molecular Cloning (1)**

Reports of readings concerning the latest developments in techniques of molecular cloning and their applications in the study of various biological systems. (Lec. 1) Pre: 552 or permission of instructor. May be repeated.

### **571 Insect Microbiology**

See Entomology 571.

### **576 Marine Microbiology**

See Oceanography 576.

### **593, 594 The Literature of Bacteriology (1 each)**

Thorough study of original literature of some phase of bacteriology. Written abstracts or papers on assigned topics are discussed in weekly conferences with instructor. (Independent Study)

### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### **654 Advances in Immunology (2)**

Reports on assigned readings concerning latest developments in the field of cellular and humoral immunity presented and discussed by students. Research paper and critical review of a scientific paper required. (Lec. 2) Pre: 533, BCH 311, or permission of instructor. May be repeated for a maximum of 4 credits. In alternate years. Next offered 2002.

### **656 Mechanisms of Bacterial Pathogenesis (3)**

Study of recent research on the molecular mechanisms of pathogenesis. Students expected to participate in roundtable discussions of recent pertinent literature. (Lec. 3) Pre: 432, 552, and BCH 311. In alternate years. Next offered fall 2002.

### **691, 692 Special Problems in Microbiology (3 each)**

Assigned research on an advanced level. Student required to outline problem, conduct the necessary literature and experimental work, and present observations and conclusions in a report. (Independent Study) Pre: graduate standing.

### **695, 696 (or BCH 695, 696) Graduate Research Seminar (1 each)**

Reports of research in progress or completed. (Seminar) Required of all graduate students in microbiology. S/U credit.



**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Microbiology Topics for Teachers (0-3 each)**

Especially designed for teachers of biology. Basic topics of microbiology from an advanced or pedagogical perspective. (Workshop)

*Note: For Virology, see Aquaculture and Fisheries Science and also Plant Sciences. For Mycology, see Biological Sciences.*

**Military Science (MSC)**

*Chairperson:* Professor Papadopoulos

**000 Leadership Laboratory (0)**

Hands-on, performance-oriented training such as rappelling, land navigation, and drill and ceremony. (Lab.) Required every semester for all ROTC students.

**101 Introduction to ROTC and the U.S. Army I (1)**

Organization and role of ROTC and the U.S. Army. Customs and traditions, leadership dimensions, officer traits, and basic military skills. (Lec. 1) Concurrent enrollment in 000 required of all ROTC students.

**102 Introduction to ROTC and the U.S. Army II (1)**

Branches of the Army, leadership, the U.S. Constitution, first aid, and general military skills. Expanding upon skills acquired in 101. (Lec. 1) Pre: 101. Concurrent enrollment in 000 required of all ROTC cadets.

**105 (or PEX 105) Aerobic Fitness and Muscular Endurance (1)**

See Physical Education and Exercise Science 105. (Practicum) Conditioning and exercise geared toward improving performance on the Army Physical Fitness Test. Required for all cadets enrolled in 301.

**201 Military Skills and History of Warfare (3)**

Introduction to basic military skills and the history of modern warfare focusing on the Army. Role of the U.S. Emphasis on the principles of war, soldier skills, and selected battles.

**202 Land Navigation and Military Skills (3)**

Map reading, land navigation, terrain association, communications, first aid, and tactics. (Lec. 3) Concurrent enrollment in 000 required of all ROTC cadets.

**205 (or PEX 205) Aerobic Fitness and Muscular Endurance (1)**

See Physical Education and Exercise Science 205. (Practicum) Conditioning and exercise geared toward improving performance on the Army Physical Fitness Test. Required for all cadets enrolled in 302.

**300 Executive Level Field Experience in Leadership (6)**

A small group instruction based leadership camp focusing on the development of military skills and fundamental physical fitness principles. Pre: junior standing.

**301, 302 Leadership and Management I, II (3 each)**

Advanced courses: application of the principles of war, small unit tactics, leadership development, planning and execution of tactical problems. (Lec. 3) Pre: concurrent enrollment in 105 for 301; 205 for 302. Concurrent enrollment in 000 required of all ROTC cadets.

**401, 402 Organizational Management and Law I, II (3 each)**

Advanced courses: military law, the profession of arms, obligations and responsibilities of an officer, Army readiness program, administrative management, world change and military implications, logistics, the military team, internal defense and development. (Lec. 3) Pre: 302 for 401; 401 for 402. Concurrent enrollment in 000 required of all ROTC cadets. Not for graduate credit.

**403 Directed Study (3)**

Experiential learning through field work in a military-type unit on an individual basis. Written analysis required on a topic selected by the chairperson. (Independent Study) Pre: 301, 302, and permission of chairperson. Not for graduate credit.

**Music (MUS)**

*Chairperson:* Professor R. Lee

*Note: Applied music courses with an asterisk—MUS 110, 210, 310, 410, and 510 (except Composition)—require a supplementary fee: \$95 for 1 credit; \$190 for 2, 3, 4, or 6 credits.*

**101 Introduction to Music (3)**

Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques, and forms from the listener's standpoint. (Lec. 3) (A)

**106 History of Jazz (3)**

The nature and origin of jazz and its development as an American folk idiom: European and African heritages, blues, ragtime, dixieland, boogie-woogie, swing, bop, cool, funky, gospel, jazz-rock, free-form, and progressive. (Lec. 3) (A)

**109 Basics of Singing (1)**

Basic singing technique, tone production, interpretation and introduction to song literature for those not enrolled in 110 - 510 Applied Music. (Lab. 2) Pre: Must not be registered for 110, 210, 310, 410 or 510.

**\*110 Applied Music (1-3)**

Private instruction in performance at the freshman level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and recital performances. Music convocation performance is encouraged but not required. (Studio) Pre: audition and permission of chairperson. May be repeated for credit.

A Voice	I Flute	Q Euphonium/ Baritone
B Piano	J Oboe	R Tuba
C Organ	K Clarinet	S Percussion
D Harpsichord	L Bassoon	T Guitar
E Violin	M Saxophone	U Harp
F Viola	N Trumpet	V Composition
G Violoncello	O French Horn	
H Contra Bass	P Trombone	

**111 Basic Musicianship (3)**

Use of folk, classical, and popular music to learn essentials of music reading and music theory. (Lec. 3) (A)

**119 Introduction to the Music Profession (1)**

Overview of the music profession. Development of an individualized plan for music study including articulation of learning and career goals. Introduction to skill areas including research and writing about music, basic musicianship, and appreciation of music literature. (Lec. 1) For music majors and minors. May be substituted for URI 101. Service learning.

**120 Music Theory (2)**

Development of basic music theory concepts as well as basic singing, rhythmic and ear training skills. (Lec. 2)

**121 Music Theory I (2)**

Rhythmic, melodic, and harmonic elements of music. Scales, modes, intervals, rhythmic notation, and triads. Part writing, analysis, and keyboard work involving primary triads. (Lec. 1.5, Lab. 1) Pre: 119 and 120 or permission of instructor. Concurrent or previous keyboard experience.

**122 Ear Training and Sightsinging I (2)**

Sightsinging in major and minor keys, including outlines of tonic and dominant harmonies. Rhythmic reading, aural recognition, with notation of material of 121. (Lec. 1.5, Lab. 1) Pre: 121. May be taken concurrently.

**169 Percussion Class (1-2)**

Basic principles in performance and pedagogy of percussion instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 2002.

**170 Guitar Class (1–2)**

Basic principles in performance and pedagogy of the guitar. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 2002.

**171 Piano Class I (1)**

Development of basic techniques and musicianship for effective use of the piano. This course will emphasize Proficiency I. (Lab. 2) Pre: Credit or concurrent enrollment in 121 and 122.

**172 Piano Class II (1)**

Further development of basic techniques and musicianship for effective use of the piano. Basic keyboard skills in transposition, sight reading accompaniments and melody harmonization with improvised accompaniment. This course will emphasize proficiencies 2 and 3. (Lab. 2) Pre: 171 or equivalent.

**173 Voice Class (1–2)**

Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 2003.

**175 String Class (1–2)**

Basic principles in performance and pedagogy of string instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Offered fall 2003.

**177 Woodwind Class (1–2)**

Basic principles in performance and pedagogy of woodwind instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Next offered fall 2003.

**179 Brass Class (1–2)**

Basic principles in performance and pedagogy of brass instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 2003.

**\*210 Applied Music (1–3)**

Private instruction in performance at the sophomore level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and music convocation performance. (Studio) Pre: 110 or equivalent. See 110 for areas of study. May be repeated for credit.

**221 History of Music I (1–3)**

Historical development of classical and popular music in European and non-European cultures: world music, Medieval, and Renaissance eras. (Lec. 1–3) Pre: 121 or equivalent competency. May be

taken for 1 or 2 credits only with permission of instructor prior to registration.

**222 History of Music II (1–3)**

Continuation of 221: Baroque, Classical, and Romantic eras. (Lec. 1–3) Pre: 225 or equivalent competency and 221 or consent of instructor. May be taken for 1 or 2 credits only with permission of instructor prior to registration.

**225 Music Theory II (2)**

Continuation of 121, covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 121 and 122.

**226 Ear Training and Sightsinging II (2)**

Continuation of 122. Covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 122 and 225; 225 may be taken concurrently.

**227 Music Theory III (2)**

Advanced rhythmic, melodic, and harmonic practice approached through analysis, keyboard, and part writing, including original work. Covers seventh, ninth, eleventh, and thirteenth chords, chromatic alteration, chromatic progression, and foreign modulation. (Lec. 1.5, Lab. 1) Pre: 225 or equivalent.

**228 Ear Training and Sightsinging III (2)**

Advanced rhythmic, melodic, and harmonic practice approached through sightsinging and dictation including computer-aided instruction. (Lec. 1.5, Lab. 1) Pre: 226 or equivalent.

**235 Introduction to Music Teaching (3)**

Overview of music teaching in schools and studios. History, philosophy, curriculum, learning theory, and current topics in music teaching as they relate to the broader field of education. (Lec. 3) Pre: 110 or 119 or permission of instructor.

**238 General Music Methods and Materials (3)**

Teaching methods, instructional materials, and evaluation procedures for general music, grades K–12. Learner characteristics and development of children and adolescents. (Lec. 3) Pre: sophomore standing in music.

**271 Piano Class III (1)**

Further development of basic keyboard performance skills in sight-reading and harmonization. This course will emphasize proficiencies 4 and 5. (Lab. 2) Pre: 172 or equivalent. Open only to music majors.

**272 Piano Class IV (1)**

Continuation of 271. Further development of keyboard performance skills in sight-reading and harmonization. This course will emphasize proficiencies 6 and 7. (Lab. 2) Pre: 271 or equivalent. Open to music majors only.

**280 Mid-Program Portfolio in Music (0)**

Individual accomplishment of activities and experiences, demonstrating interest and competency in music at the midpoint in the student's program of studies as a music major. (Portfolio) Pre: sophomore standing in music.

**283 Vocal Diction (3)**

Basic phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most frequently encountered in vocal and choral literature (Italian, French, German, and Latin). English diction in singing. In alternate years. Next offered spring 2003.

**291 University Marching Band (0–2)**

Rehearsal and performance of music, drill, and shows for URI football games. (Rehearsal 8) May be repeated for credit. S/U only for 0 credit.

**292 Concert Band (0–1)**

Study and performance of concert band music. Open to all students. (Rehearsal 3) May be repeated for credit. S/U only for 0 credit.

**293 University Chorus (0–1)**

(Rehearsal 3) May be repeated for credit. S/U only for 0 credit.

**300 (250) Music Convocation (0–1)**

Study of repertory and techniques of concert presentation through attendance of student recitals and presentations by faculty and visiting artists. (Lab.) Attendance at 75 percent of events required. May be repeated.

**\*310 Applied Music (2–4)**

Private instruction in performance at junior level. Two, three, or four credits equal an hour lesson per week. More credit requires additional preparation time, higher levels of performance, and junior recital or music convocation performance. (Studio) Pre: 210 or equivalent. See 110 for areas of study. May be repeated for credit.

**311 Basic Conducting (2)**

A course in elementary conducting techniques including baton techniques and score study as well as the organization of instrumental and choral rehearsals. Pre: credit or concurrent enrollment in 225 and 226.

**312 Advanced Conducting (3)**

A study of problems and approaches to instrumental and choral conducting based on advanced baton techniques. Principles of interpretation and the art of communication through practical experience with departmental organizations. Pre: 311.

**322 History of Music III (1–3)**

Continuation of 221 and 222: European, African-American, Hispanic, and other contributions to the classical and popular music of the twentieth century. (Lec. 1–3) Pre: 121 or equivalent competency and 221 or consent of instructor. May be taken for

1 or 2 credits only with permission of instructor prior to registration.

### **329 (or EDC 329) Music for the Elementary School Teacher (3)**

Fundamentals of music and methods employed in teaching music and making it a more meaningful and integral part of the curriculum in the elementary school. (Lec. 3) Open only to elementary and early childhood education majors.

### **339 Choral Methods and Materials (3)**

Organization and administration of choral music programs in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250 or the equivalent.

### **340 Instrumental Methods and Materials (3)**

Organization and administration of the instrumental music program in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250.

### **350 Junior Recital (0-1)**

Performance of a public program at least 20 minutes in duration after faculty examination. (Studio) Pre: concurrent enrollment in 310.

### **371 Piano Accompanying (1)**

Development of sight-reading skills. Preparation and performance of accompaniments. (Lec. 1) Pre: permission of piano faculty. May be repeated.

### **394 Symphonic Wind Ensemble (0-1)**

(Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

### **395 Concert Chorus (0-1)**

(Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

### **396 Jazz Studio Ensemble (0-1)**

Performance and study of jazz and studio music as related to professional experience. (Rehearsal 3) Pre: audition and permission of instructor. S/U only for 0 credit.

### **397 University Symphony Orchestra (0-1)**

Study and performance of standard and modern repertoire for the orchestra. (Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

### **398 Chamber Music Ensembles (0-1)**

Chamber music ensembles are small performance ensembles normally restricted to one performer per part. Study and perform repertoire in the following areas, or combinations of these areas: keyboard, string, woodwind, brass, percussion, vocal, guitar, jazz, etc. (Rehearsal 2) Pre: audition and/or permission of chamber music coach.

### **407 The Symphony (3)**

Study of the development of orchestration and of formal procedures such as the sonata, rondo, and variations. Includes works by composers such as Haydn, Beethoven, Brahms, and Tchaikovsky. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered fall 2003.

### **408 The Opera (3)**

History of opera from its beginnings in Italy in the seventeenth century to the present, including works by composers such as Monteverdi, Purcell, Mozart, Wagner, Verdi, and Puccini. Pre: credit or concurrent enrollment in 222 or the ability to read music. Offered every seventh semester. Next offered fall 2005.

### **\*410 Applied Music (2-4)**

Private instruction in performance at the senior level. Two, three, or four credits equal an hour lesson per week. More credit requires additional preparation time, higher levels of performance, and senior recital or music convocation performance. (Studio) Pre: 310 or equivalent. See 110 for areas of study. May be repeated for credit. Not for graduate credit, except 410V (Composition).

### **416 Form and Analysis (3)**

Critical study of the structure of tonal music. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. (Lec. 3) Pre: 227 or equivalent. In alternate years. Next offered fall 2002.

### **417 Instrumentation and Choral Arranging (3)**

Range, timbre, transpositions, and other characteristics of instruments, singly and in combination. Elements of choral arranging. Exercises with attention to part writing, harmony, and form. Setting of a small piece of music for orchestra, band, or chorus required. Pre: credit or concurrent enrollment in 227 or equivalent. In alternate years. Next offered fall 2003.

### **420 Eighteenth-Century Counterpoint (3)**

Tonal polyphony in the style of J.S. Bach. Includes creative exercises in writing counterpoint in Baroque style and the study of representative compositions such as the inventions and fugues of Bach. (Lec. 3) Pre: 227 and 228. In alternate years. Next offered spring 2004.

### **421 Electronic and Computer Music Research (3)**

Study and application of technology for music research in music education, theory/composition, music history, and performance, culminating in a major project in the student's area of specialization. (Lec. 2, Lab. 2) Pre: 235 or equivalent. In alternate years. Next offered spring 2003.

### **424 (323) Jazz Theory and Improvisation (3)**

An intensive study and practice of the formal elements of jazz improvisation. (Lec. 1, Lab. 4) Pre:

225, 226 and acceptance into 210. In alternate years. Next offered spring 2004.

### **430 The Renaissance Era (3)**

Music at European courts and cathedrals (1400-1600), including vocal masses, motets, madrigals, and chansons, and instrumental canzonas, ricercars, toccatas, and variations of Dufay, Josquin, Palestrina, Gabrieli, et al. (Lec. 3) Pre: 221 or the ability to read music. Offered every seventh semester. Next offered spring 2003.

### **431 The Baroque Era (3)**

Music of 1600-1750, from the rise in Italy of opera, oratorio, idiomatic instrumental music, the sonata, and the concerto, through the works of German masters Bach and Handel. (Lec. 3) Pre: 222 or the ability to read music. Offered every seventh semester. Next offered spring 2004.

### **432 The Classic Era (3)**

Music of 1750-1825, beginning with the founders of the Classical style, including D. Scarlatti, Gluck, and the sons of Bach, and culminating in the works of Haydn, Mozart, and Beethoven. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered fall 2004.

### **433 The Romantic Era (3)**

Music of 1825-1900, with emphasis on topics central to the era, including program music, nationalism, piano virtuosity, opera, lieder, the cyclic symphony, and turn-of-the-century Viennese post-Romanticism. (Lec. 3) Pre: 222 or the ability to read music. Offered every seventh semester. Next offered spring 2006.

### **434 The Modern Era (3)**

Music of the modern era, with emphasis on changing aesthetics as revealed through the analysis of selected compositions. (Lec. 3) Pre: 227 or the ability to read music. Offered every seventh semester. Next offered spring 2005.

### **442 Directed Study in Applied Music Pedagogy (2)**

Research in materials and approaches for studio teaching. Pre: 4 credits in 210. In alternate years. Next offered fall 2002.

### **450 Senior Recital (0-1)**

Performance of a public program at least 20 minutes in duration after faculty examination. Pre: concurrent enrollment in 410. Not for graduate credit.

### **470 Special Topics in Music (1-3)**

Exploration of advanced topics not covered by the standard curriculum but of interest to faculty and students in a particular semester. Topics in performance, music history, music theory or composition, music education. May be repeated for credit with a different topic.

**480 Graduation Portfolio in Music (0–2)**

Individual accomplishment of activities and experiences demonstrating competence as a music professional. Achievement of entry-level professional behaviors indicating potential success as a music major graduate. (Portfolio) Pre: senior standing in music. Not for graduate credit. S/U only.

**485 Opera Workshop (0–1)**

Coordination of music and drama. Singing, performing, and acting techniques on stage. Possible experience in conducting, coaching, directing, and stage management. Development of professional standards and attitudes. Preparation and presentation of scenes from various operas. Primarily for students in voice. (Rehearsal 2) Pre: audition and/or permission of instructor. May be repeated for credit.

**490 Independent Study (1–3)**

Preparation of a project under the guidance of a member of the appropriate faculty. (Independent Study) Pre: acceptance by faculty member who will be the project advisor and approval of chairperson. May be repeated for credit.

**\*510 Applied Music (2, 3, 4, or 6)**

Private instruction. One 60-minute lesson each week. Levels, master classes, and recital performance as prescribed in the applied music syllabi. (Studio 60 minutes) Pre: audition demonstrating proficiency appropriate to the selected M.M. degree. See 110 for areas of study. May be repeated.

**511 Advanced Choral Conducting (3)**

Critical study of choral music scores with reference to interpretation and performance. Development of technical command and expressive skills includes supervised rehearsal and conducting of University ensembles. (Lec. 3) Pre: knowledge of conducting technique as evidenced in audition or 311.

**512 Advanced Instrumental Conducting (3)**

Critical study of orchestral and chamber music scores with reference to interpretation and performance. Development of technical command and expressive skill includes supervised rehearsal and conducting of University ensembles. (Lec. 3) Pre: knowledge of basic baton as evidenced in audition or credit in 312.

**513 Graduate Conducting Project (3)**

Preparation and conducting of a program of chamber music and/or a major ensemble with documentation. (Studio 3) Pre: 511, 512, and 548 and permission of chairperson.

**540 Foundations of Music Education (3)**

Examination of the broad influences upon music education. Historical, philosophical, sociological, psychological, and curricular foundations. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered spring 2003.

**545 Musical Learning, Evaluation, and Assessment (3)**

A study of cognitive, psychomotor, and affective learning in music. The ways in which musical learning may be evaluated and assessed. The needs of special populations will be included. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 2003.

**548 Research in Music (3)**

Study of research techniques as applied to the art of music. Major project procedures and data collection and examination in the following research categories: historical, philosophical, and empirical. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 2002.

**550 Graduate Performance Recital (0–1)**

Performance of advanced repertoire of various styles in a public program at least 55 minutes in duration for the M.M. in performance and 45 minutes in duration for the M.M. in music education after faculty acceptance. (Studio) Pre: concurrent enrollment in 510 and 6 or more credits in 510 for the M.M. in performance or 4 or more credits in 510 for the M.M. in music education.

**552 Graduate Composition Recital (0–1)**

A juried recital of at least 40 minutes of original compositions prepared by the composer. (Studio) Pre: concurrent enrollment in 510V and 3 or more credits in 510V.

**567 Seminar in Performance and Pedagogy (2)**

Study of performance literature, practice, and pedagogy. Research projects and supervised teaching experience appropriate to the major performance area. (Lec. 2) Pre: concurrent enrollment in 550. In alternate years. Next offered fall 2002.

**570 Graduate Project (3)**

Independent study resulting in a major essay, composition, or orchestration. (Independent Study) Pre: 548 and permission of chairperson.

**571 Special Topics in Music (1–3)**

Exploration of advanced topics not covered by the standard graduate curriculum but of interest to faculty and students in a particular semester. Possible topics include performance, music history, music theory, composition, and music education (Lec. 1–3) May be repeated for credit with a different topic.

**579 Experiential Learning in Music (2)**

Developing competence through an individual and/or collaborative experiential activity involving music research, performance, service, and/or teaching in university and community settings. May include professional music studio or computer lab work. Student will work with his or her major professor or with the director of graduate studies. (Practicum) Pre: graduate standing and previous or concurrent enrollment in 580.

**580 Master of Music Portfolio I (0)**

Planning individual activities and experiences demonstrating competence in music at the graduate level. Should be taken in the first semester of matriculation. Student will work with his or her major professor or with the director of graduate studies. (3 common Seminars) Pre: graduate standing in music. Not required for students whose bachelor's degree is from URI. S/U only.

**581 Master of Music Portfolio II (1)**

Individual accomplishment of activities and experiences demonstrating competence at the graduate level of music. Achievement of professional behaviors indicating significant growth in areas of specialization. Oral presentation required. Should be taken in final semester of study. Student will work with his or her major professor or with the director of graduate studies. (3 common Seminars) Pre: graduate standing in music. S/U only.

**583 Vocal Diction (3)**

Phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most encountered in vocal literature (French, Italian, and German). English diction in singing. (Lec. 3) In alternate years. Next offered spring 2003.

**590 Piano Accompanying (1)**

Development of sightreading skills. Preparation and performance of accompaniments of major works. (Studio 1) Pre: permission of piano faculty. May be repeated for a maximum of 3 credits.

**593 University Chorus (0–1)**

(Rehearsal 3) Pre: audition at graduate level of performance. May be repeated.

**594 Symphonic Wind Ensemble (0–1)**

(Rehearsal 3) Pre: audition at graduate level of performance.

**595 Concert Choir (0–1)**

(Rehearsal 3) Pre: audition at graduate level of performance.

**596 Jazz and Studio Ensemble (0–1)**

Study and performance of jazz and studio music, with leadership roles in improvisation and performance. (Rehearsal 3) Pre: audition at graduate level of performance.

**597 University Symphony (0–1)**

(Rehearsal 3) Pre: audition at graduate level of performance. May be repeated.

**598 Chamber Music Ensembles (0–1)**

Chamber music ensembles are small performance ensembles normally restricted to one performer per part. Chamber music ensembles study and perform repertoire in the following areas, or combinations of areas: keyboard, string, woodwind, brass percussion, vocal, guitar, jazz, etc. (Rehearsal 2) Pre: audition and/or permission of chamber music coach.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: 548. May be repeated. S/U credit.

**Natural Resources Science (NRS)**

*Chairperson:* Professor Husband

**100 Natural Resource Conservation (3)**

Introduction to man's use and management of natural resources: land, food, forest, wildlife, water, minerals, and air, with a survey of contemporary resource-use problems in environmental pollution. (Lec. 3) (S)

**101 Freshman Inquiry into Natural Resources Science (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Natural Resources Science. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**186 Analysis and Presentation of Environmental Data (3)**

The scientific method, summarizing and reporting of numerical data, unique properties of environmental data, method of unit conversion, graphic visualization of environmental data. (Lec. 1, Lab. 2) Pre: 100 or permission of instructor. Open to natural resources science majors only.

**200 Seminar in Natural Resources (1)**

Review and discussion of research, management, and other topics in natural resources. Speakers expose students to issues that natural resources professionals are concerned with and the work that they do. Pre: 100.

**212 Introduction to Soil Science (3)**

Physical, biological, and chemical properties of soils and their practical application to environmental science. Introduction to soil genesis, classification, and land-use and conservation issues. (Lec. 3) (N)

**223 Conservation of Populations and Ecosystems (3)**

Conservation of biological diversity in a world dominated by humans. Conservation biology theory, application; ecosystem conservation; landscape ecology principles. (Lec. 3) Pre: 100, BIO 101, 102, 112 or 113.

**301 Introduction to Forest Science (3)**

Development and importance of forestry; forest regions; tree characteristics and identification with emphasis on Northeastern species; forest environment; tree growth and site productivity. (Lec. 2, Lab. 2) Pre: BIO 112 or 102.

**302 Fundamentals of Forest Management (3)**

Wood properties, timber harvesting, measurement and utilization of forest products; establishment, tending, and protection of forest stands; silvicultural systems; forest inventory procedures and management plans. (Lec. 2, Lab. 2) Pre: 301.

**304 Field Ornithology (3)**

Identification, field study techniques, habitats, and basic biology of birds. Emphasis on field identification of local species. (Lec. 1, Lab. 4) Pre: BIO 113 or 101.

**305 Principles of Wildlife Ecology and Management (3)**

Application of ecological knowledge to the management of wild vertebrate populations and the habitat upon which they depend. (Lec. 3) Pre: BIO 112, 113 or 101, 102, and 262.

**309 Wildlife Management Techniques Laboratory (3)**

Application of practical field techniques for quantification and evaluation of wildlife and habitats. Methods of field identification, sampling, and data analysis. (Lab. 4, Project 3) Service learning. Pre: 186, and 305 or concurrent enrollment.

**312 Methods in Soil and Water Analysis (3)**

Principles and exercises in the collection, analysis, and interpretation of soil and water data. Sampling and experimental design, chemical analysis techniques, data processing, and spatial analysis. (Lec. 1, Lab. 4) Pre: 212 and CHM 101 or 103 or permission of instructor. In alternate years. Next offered fall 2002.

**324 Biology of Mammals (3)**

Classification, distribution, field study techniques, and basic biology of mammals. Emphasis on New England species. (Lec. 2, Lab. 3) Pre: BIO 113 or 101. In alternate years. Next offered in spring 2003.

**351 Soil Morphology Practicum (1)**

Six weeks of practical experience in the description of soil profiles under field conditions. Field trips to observe, describe, and interpret morphological properties as utilized in soil judging. (Practicum) Pre: 212 or permission of instructor. May be repeated for credit with permission of chairperson.

**361 Watershed Hydrology and Management (4)**

Study of the processes that govern the hydrology and quality of surface runoff and groundwater. Emphasis on watershed management and the impact of land use on water quality. (Lec. 3, Lab. 2) Pre: 212 or permission of instructor.

**395 Research Apprenticeship in Natural Resources Science (1-3)**

Supervised experience for qualified undergraduates who assist NRS faculty and graduate students in departmental research projects. Tasks may include

literature review, research design, installation of sampling plots and equipment, laboratory analyses, data collection, and data analysis. (Practicum) Pre: sophomore to senior standing and permission of instructor. Limited to NRS majors. May be repeated for a maximum of 6 credits. S/U credit.

**397 Natural Resources Internship (1-6)**

Supervised work experience in forestry, wildlife management, soil science, water resources, environmental education, or related areas of natural resources management. (Practicum) Pre: 100, 212, and approval of chairperson. Open only to NRS majors. May be repeated for a maximum of 6 credits. S/U credit.

**402 Wildlife Biometrics (3)**

Presentation of statistical design and analysis of ecological field measurements. Emphasis on quantitative measurements and data analyses used in wildlife population research. (Lec. 2, Lab. 3) Pre: BIO 262 and STA 308 or 409 or permission of instructor. In alternate years. Next offered in spring 2004.

**403 Wildlife Biometrics Field Investigations (1)**

Independent field study of wildlife populations using modern quantitative measurements and data analyses. Emphasis on experimental design, data collection and recording, statistical analysis, data interpretation, and reporting. (Practicum) Capstone course. Pre: concurrent enrollment in 402. Not for graduate credit.

**406 Wetland Wildlife (3)**

Introduction to management of wetland wildlife. Emphasis on management techniques used for major wetland types, waterfowl, furbearers, and non-game wildlife. (Lec. 2, Lab. 2) Pre: BIO 262 or permission of instructor.

**407 Nongame and Endangered Species Management (3)**

Management programs for nonhunted species, basic conservation biology, and techniques used for management of endangered species. (Lec. 3) Pre: 305 or concurrent enrollment in 305.

**408 Environmental Education: Theory and Experiential Learning**

See Plant Sciences 407.

**409 Concepts in GIS (3)**

Discussion of the unique properties of spatial data, GIS data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. (Lec. 3) Pre: BIO 262 or permission of instructor. Not for graduate credit.

**410 Fundamentals of GIS (3)**

Emphasis on using a geographic information system (GIS) to create a geographically referenced spatial database, spatial topology, data visualization, computer-assisted map making, and spatial

data query and analysis. (Lab. 6) Pre: past or simultaneous enrollment in 409 or 509.

#### **412 Soil-Water Chemistry (3)**

Biogeochemistry of soil-water interactions. Soil composition, the exchange and sorption of elements, trace element behavior, redox reactions and control of these factors on availability and loss. (Lec. 3) Pre: 212 and CHM 124 and 126 or permission of instructor. In alternate years. Next offered fall 2003.

#### **415 Remote Sensing of the Environment (3)**

Introduction to fundamentals of air-borne and space-borne remote sensing. Emphasis on remote sensing applications in terrestrial environmental and natural resources studies. (Lec. 2, Lab. 2)

#### **423 Wetland Ecology (4)**

Formation, development, and distinguishing features of inland and coastal wetlands. Topics include classification, geology, hydrology, soils, plant ecology, vegetation dynamics. Primary emphasis on wetlands of the glaciated Northeast. (Lec. 2, Lab. 4) Pre: BIO 262, GEO 103, and concurrent enrollment in NRS 425 or 525.

#### **424 Wetlands and Land Use (4)**

Survey of wetland values, exploitation, current status, and legal protection. Emphasis on critical issues including wetland evaluation, impact assessment, mitigation procedures. Field trips provide examples of wetland use conflicts. (Lec. 2, Lab. 4) Pre: 423 or permission of instructor.

#### **425 Wetland Field Investigations (1)**

Independent field study of a diverse freshwater wetland ecosystem, with emphasis on aerial photo-interpretation, wetland classification, and in-depth examination of glacial geology, hydrology, plant ecology, and soils. (Practicum) Capstone course. Pre: concurrent enrollment in 423. Not for graduate credit.

#### **426 Soil Microbiology (3)**

Occurrence, metabolism and ecology of soil microorganisms, with emphasis on nutrient cycling, soil pathogens, transformation of organic and inorganic pollutants, and soil biotechnology. (Lec 3) Pre: 212 or permission of instructor.

#### **430 Forest Resource Management (4)**

Silvicultural systems, timber harvesting, forest products, protection and health of forest stands, forest inventory; emphasis on integrating knowledge to create feasible forest management plan based on landowner objectives. (Lec. 2, Lab. 4) Pre: 301 and permission of instructor.

#### **440 Ecosystem Processes in Land and Water Management (3)**

Processes affecting the flows of energy, water, mass, and nutrients in terrestrial and aquatic ecosystems, with emphasis on linkages between

ecosystems and management implications. (Lec. 3) Pre: BIO 262 and NRS 212 and CHM 101 or 103 or permission of instructor.

#### **441 Methods in Ecosystem Analysis (2)**

Measurement of processes affecting the flow of energy, water, mass, and nutrients in terrestrial ecosystems of southern New England. Comparison of ecosystems and assessment of management impacts. (Lab. 4) Pre: 212 and BIO 262 and CHM 101 or 103 or permission of instructor.

#### **450 Soil Conservation and Land Use (3)**

Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. (Lec. 3) Pre: 212 or permission of instructor.

#### **451 Soil and Water Conservation Technology (3)**

Principles and practices involved in mechanical protection, improvement, and development of soil and water resources. Design of conservation features and structures. (Lec. 2, Lab. 3) Pre: MTH 111 or equivalent.

#### **452 Soil, Water, and Land Use Investigations (1)**

Independent field and laboratory study of soil and water topics related to land use issues. (Practicum) Capstone course. Pre: concurrent enrollment in 450.

#### **471 Soil Morphology and Mapping (3)**

A detailed study of the morphological properties of soils and their distribution on the landscape. Practical experience in describing soil profiles and preparing soil maps. (Lec. 1, Lab. 4) Pre: 212 or permission of instructor.

#### **475 Plant Nutrition and Soil Fertility**

See Plant Sciences 475.

#### **482 Innovative Subsurface Remediation Technologies**

See Geosciences 482.

#### **484 Environmental Hydrogeology**

See Geosciences 484.

#### **491, 492 Special Projects (1–3 each)**

Special work to meet the needs of individual students in natural resources. (Independent Study) Pre: permission of chairperson.

#### **495 Advanced Natural Resources Apprenticeship (3)**

Collaboration with faculty and graduate students in departmental research, including supervision and mentoring of students enrolled in 395. Emphasis on independent decision-making and leadership of undergraduate research teams. Limited to majors. May be repeated for a maximum of 6 credits. (Practicum) Pre: 395 and permission of instructor. S/U only. Not for graduate credit.

#### **497 Natural Resources Cooperative Internship (6–12)**

Supervised work experience with a governmental agency, nongovernmental organization, or private company in the environmental field. (Practicum) Pre: senior standing and permission of department. Not for graduate credit.

#### **498 Teaching Practicum in Natural Resources Science (1–3)**

Teaching experience for qualified undergraduates through actual involvement in planning and assisting in NRS courses. May include supervised participation in a discussion group, assisting in a laboratory or field course, or tutoring. (Practicum) Pre: senior standing, previous enrollment in the course to be taught, and permission of instructor. Limited to NRS majors. May be repeated for a maximum of 3 credits. Not for graduate credit. S/U only.

#### **499 Senior Thesis in Natural Resources Science (6)**

In-depth research or outreach effort reviewed by a faculty committee and culminating in a thesis written in scientific journal format. Oral presentation to the committee required. (Independent Study) Pre: GPA of at least 3.25, successful completion of 491 or 492 and permission of department chairperson. Not for graduate credit.

#### **503 Wildlife Biometrics Field Investigations (1)**

Independent field study of wildlife populations using modern quantitative measurements and data analyses. Emphasis on experimental design, data collection and recording, statistical analysis, data interpretation, and reporting. (Practicum) Pre: concurrent enrollment in 402.

#### **505 Biology and Management of Migratory Birds (2)**

Current programs, problems, and techniques for managing migratory game and nongame birds. Emphasis on basic biology of the species, habitat management, and harvest management. (Seminar) Pre: 305 or permission of instructor. In alternate years. Next offered spring 2004.

#### **508 Seminar in Biological Literature**

See Biological Sciences 508.

#### **509 Concepts of GIS and Applications in Environmental Science (3)**

Unique properties of spatial data, geographic information system (GIS) data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. Uses in ecology, conservation, soil science, geohydrology, and wildlife management. (Lec. 3) Pre: BIO 262 or permission of instructor.

#### **510 Soil-Water Relations (3)**

Processes governing water flow and availability in unsaturated and saturated soil. Emphasis on soil-water-plant relationships with applications to

watershed management and hydrology. (Lec. 2, Lab. 3) Pre: 212, 461, or permission of instructor.

### 516 Advanced Remote Sensing (3)

Digital remote sensing in environmental and natural resource studies. Emphasis on satellite remote sensing image rectification, georeferencing, classification, and integration with GIS. (Lec. 2, Lab 2) Pre: 415 or permission of instructor.

### 520 Quantitative Techniques in Natural Resource Research (3)

Research design, database management, and analysis and interpretation of natural resource data. Emphasis on hands-on experience of quantitative and computerized techniques commonly used by natural resource scientists. (Lec. 2, Lab 2) Pre: STA 308 and permission of instructor.

### 522 Advanced GIS Analysis of Environmental Data (3)

Discussion and application of terrain modeling, spatial statistics, proximity analysis, remote sensing/GIS linkages, and environmental data integration. Emphasis on ecological data at watershed/landscape scales. (Lec. 1, Lab. 6) Pre: 410 or permission of instructor.

### 524 Application of Advanced Spatial Analysis (1)

Independent application of spatial data analysis to derive solutions to environmental problems, with emphasis on GIS data integration, vector and raster modeling, and visualization of analytical and quantitative results. (Practicum) Pre: concurrent enrollment in 522. Capstone course.

### 525 Wetland Field Investigations (1)

Independent field study of a diverse freshwater wetland ecosystem, with emphasis on aerial photo-interpretation, wetland classification, and in-depth examination of glacial geology, hydrology, plant ecology and soils. (Practicum) Pre: concurrent enrollment in 423.

### 526 Microbial Ecology of Soils and Sediments (3)

Occurrence and activity of microorganisms in soils and sediments, including wetlands. Environmental physiology of microbes; habitat interactions; methods of study; importance of microbial processes to ecosystem productivity, pollutant degradation, and atmospheric chemistry. (Lec. 3) Pre: 212, MIC 211, or permission of instructor.

### 532 (or REN 542) Conservation Biology and Resource Economics (2)

Examination of different components of conservation of biological diversity. Topics include minimum viable populations, ecology and economics of reserve design, reintroductions, causes of extinction, and the ecosystem conservation strategies. (Seminar) Pre: BIO 262, REN 105 or permission of instructor.

### 533 Landscape Pattern and Change (3)

Remote sensing perspective of landscape characterization; landscape dynamics; spatiotemporal land-use and land-cover change; modeling and analysis of landscape by integration of remote sensing, GIS, GPS, and in situ data. (Lec. 2, Lab. 2) Pre: 415 or permission of instructor.

### 534 Ecology of Fragmented Landscapes (2)

Presentation of the concepts of landscape ecology with emphasis on populations of plants and animals in fragmented habitats. Topics discussed include: habitat corridors, fluxes of energy and species along habitat edges, shape analysis, and stability of populations in habitat patches. (Lec. 2) Pre: BIO 262 or permission of instructor. In alternate years. Next offered spring 2003.

### 538 Physiological Ecology of Wild Terrestrial Vertebrates (3)

Relationships between animal physiology and the ecology and dynamics of wild vertebrate populations, including birds, mammals, reptiles, and amphibians. (Lec. 3) Pre: 305 or permission of instructor.

### 555 Applied Coastal Ecology (2)

Resource management problems in coastal national parks. Topics include air and water pollution, barrier island erosion, deer overpopulation, Lyme disease, and ecosystem restoration. Examples of conflicting land-management mandates and research needs discussed. Optional field trips. (Lec. 2) Pre: advanced course work or experience in topical fields or permission of instructor. Offered in even-numbered years.

### 567 Soil Genesis and Classification (3)

Development of soils as influenced by physical, chemical, biological, and climatic factors. Processes of soil formation presented relative to soil taxonomy and geographic distribution. (Lec. 3) Pre: 471 or permission of instructor.

### 568 Recent Advances in Natural Resources Science (3)

Critical analysis and presentation of technical reports on recent advances in natural resources science. Topics will vary according to instructor and background of students. (Lec. 3) Pre: graduate standing or permission of instructor.

### 582 Seminar in Soil Ecology and Biochemistry (1)

Discussion of current topics in special areas of soil ecology and biochemistry based on primary scientific literature. (Lec. 1) Pre: senior or graduate standing, 212, and permission of instructor.

### 583 Innovative Subsurface Remediation Technologies

See Geosciences 582.

### 584 Environmental Hydrogeology

See Geosciences 584

### 591, 592 Special Problems (1–3 each)

Advanced independent research projects supervised by members of the research staff and unrelated to Master's or Doctoral research. Projects developed to meet individual needs (Independent Study) Pre: permission of chairperson.

### 600 Graduate Seminar in Natural Resources (1)

Presentation of research reports and discussion of current topics in natural resources. Critique of research methodology and scientific literature. (Seminar) Pre: graduate standing in NRS. Enrollment is required of all graduate students in residence, but no more than 2 credits may be taken for program credit. S/U credit.

## New England Studies (NES)

### 300 The New England Experience (3)

Life in New England, past and present, through varying disciplines focusing on a new topic each semester. (Lec. 3) May be repeated for credit with different emphasis.

### 400 Special Topics in New England Studies (1–3)

Specialized topics in the study of New England offered by specialists in the field. (Seminar) May be repeated for credit with different topics.

## Nursing (NUR)

Dean: Associate Professor Joseph

### 103 Professional Practice in Health and Illness (3)

Introduction to the concept of professional helping including problem management, communication, the teaching process, and critical decision making. Analysis of ecosystem influences and cultural variability in health, illness, and health care. (Lec. 2, Lab. 3)

### 150 Human Sexuality (3)

Interdisciplinary approach to the study of individual and societal determinants in the development, integration, and expression of human sexuality and a code of sexual behavior. (Lec. 3) (S)

### 203 Comprehensive Health Assessment (3)

Introduces the techniques of history taking and systematic health assessment of individuals across the life span. Recognition of normal findings is emphasized. (Lec. 2, Lab. 3) Pre: BIO 242 and 244; NUR 103.

### 213 Pathophysiology (3)

System approach to the examination of etiology, pathogenesis, and clinical manifestations underlying disease across the life span. Related research and diagnostic tests will be examined. (Lec. 3) Pre: BIO 242 and 244; MIC 201.

**223 Health Promotion: Nursing Strategies and Interventions (3)**

Examination of health promotion in a nursing context. Emphasis on macro- and micro-level health promotion strategies applicable to nursing practice with individuals, families, and communities. (Lec. 3) Pre: 203; BIO 242 and 244; MIC 201; NFS 207 and PSY 232.

**224 Practicum in Health Promotion Nursing (3)**

Application of health promotion principles and nursing strategies to clients of all ages, to families, and to communities. Emphasis on utilization of the nursing process in selected clinical situations. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 223.

**246 Conceptual Bases of Professional Nursing (3)**

Overview and synthesis of concepts essential to development of the professional nursing role. Primary emphasis on expanding and refining the theoretical bases for decision making and nursing strategies in client care. (Lec. 3) For R.N. students only.

**273 Critical Thinking and Research in Nursing (3)**

Introduction to the principles of scientific inquiry and the research process, including identification of forms of analytical thinking common to problem solving in nursing. Opportunity for evaluating and applying research findings. (Lec. 3) Pre: PSY 300 or STA 220 or MTH 107 and concurrent or previous enrollment in 224.

**323 Health Restoration: Nursing Strategies and Interventions (6)**

Focuses on strategies and interventions to restore health to individuals across the life span who have acute health problems. Emphasis on the nursing process and theoretical foundation. (Lec. 6) Pre: 224, 213, and 273; credit or concurrent enrollment in BMS 225.

**324 Practicum in Health Restoration Nursing (6)**

Application of health restoration strategies and interventions to adult clients with acute health problems. Application of the nursing process and scientific basis of nursing care. (Lab. 18) Service learning. Pre: credit or concurrent enrollment in 323.

**333 Psychiatric Mental Health Nursing (3)**

Nursing strategies to support and care for persons with limitations in psychosocial functioning in the context of family and community; psychiatric and/or mental health. (Lec. 3) Pre: 324; credit or concurrent enrollment in BMS 333.

**334 Practicum in Psychiatric Mental Health Nursing (3)**

Application of the nursing process and the use of self as the therapeutic agent with individuals and groups of clients. Emphasis on developing nursing strategies for psychiatric and/or mental health care.

(Lab. 9) Service learning. Pre: credit or concurrent enrollment in 333.

**343 Nursing in Childbearing and Reproductive Health (3)**

Emphasis on the nursing management of childbearing families and reproductive health issues across the life span. (Lec. 3) Pre: credit or concurrent enrollment in BMS 333 and NUR 334.

**344 Practicum in Childbearing and Reproductive Health Nursing (3)**

Application of the nursing process in the care of individuals and families with childbearing and reproductive experiences. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 343.

**346 Practicum in Nursing Management of Clients (3)**

Practicum in development of leadership and management strategies for registered nurses in selected clinical settings. Emphasis on role development and analysis of issues related to client care and nursing practice. (Practicum) Service learning. Pre: 246, 273, and prior faculty approval.

**349 Aging and Health (3)**

Examines normal age changes, effects on health, health problems, and interventions to achieve optimal wellness. Utilizes a systems perspective emphasizing healthy, positive aging and incorporates an interdisciplinary approach to care. (Lec. 3)

**360 Impact of Death on Behavior (3)**

Seminar to explore the human experience of dying and the issue of quality of life. Group discussion focuses on the effect that individual and social values and medical and social structures have on one's grief response and bereavement process. (Lec. 3) (L)

**390 Directed Study (1-3)**

Research study or individual scholarly project relating to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: admission to the College of Nursing. S/U credit.

**423 Chronic Health Alterations: Strategies and Interventions (3)**

Examination of client and/or family problems associated with chronic illness and nursing management in various settings. Emphasis on theoretical analysis of strategies applicable to management of chronicity across the life span. (Lec. 3) Pre: 344 and BMS 333. Not for graduate credit.

**424 Practicum in Nursing of Older Adults with Health Alterations (3)**

Syntheses of gerontological knowledge and the application of the nursing process in the complex health care of older adults and their families. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 423. Not for graduate credit.

**434 Practicum in Nursing of Children with Health Alterations (3)**

Synthesis of pediatric knowledge and the application of the nursing process in the care of ill children and their families. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 423. Not for graduate credit.

**443 Nursing of Vulnerable Populations in the Home and Community (3)**

Analysis of concepts related to the nursing care of clients in the home and community, with emphasis on vulnerable populations. (Lec. 3) Pre: 434, 424. For R.N. students; 246, 273. Not for graduate credit.

**444 Practicum in Nursing of Vulnerable Populations (3)**

Application of the nursing process in the home care setting and with vulnerable populations in the community. In-depth analysis of a selected community, including utilization of the epidemiological process. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 443. Not for graduate credit.

**446 Directed Study for Registered Nurse Students (1-4)**

Clinical advanced study or individual scholarly project related to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: 246, 273, and approval of faculty. Not for graduate credit.

**454 Theories, Issues, and Practice in Professional Nursing (3)**

Examination of theories, issues, and concepts related to professional nursing. Emphasis on the application of principles of leadership and professionalism in a clinical experience. (Lec. 1.5, Lab. 4.5) Service learning. Pre: credit or concurrent enrollment in 444. Not for graduate credit.

**459 Perspectives on Male and Female Sexuality (3)**

Examination of the multifaceted perspectives (somatic, emotional, ethical, cultural) on male and female sexuality. Topics include history and recent developments in sexology research, therapy, role and gender issues. (Lec. 3) Pre: 150 or permission of instructor.

**467 Independent Study in Human Sexuality (2-6)**

A specifically designed learning experience for the theoretical study of human sexuality and related practice strategies. (Independent Study) Pre: 150 or equivalent; permission of instructor.

**468 Practicum in Theories of Human Sexuality (2-6)**

A specifically designed practicum involving the application of theory and development of practice strategies in specific areas within the field of



human sexuality. (Practicum) Pre: 150 and 467 or equivalent; permission of instructor.

### **500 General Study of Nursing Knowledge for Nursing Practice (4)**

Introduction to the essential features of nursing knowledge and its development in relation to nursing practice. Study of approaches to nursing knowledge development, and major conceptual/theoretical knowledge in nursing. (Lec. 3, Lab 2) Pre: graduate standing.

### **503 Expanded Nursing Assessment Skills (3)**

Expansion of nursing assessment skills including health history taking and physical, psychological, and social assessment skills. Specific physical assessment skills included are inspection, auscultation, percussion, and palpation. (Lec. 2, Lab. 1) Pre: enrollment in the M.S. program in nursing.

### **504 Expanded Nursing Assessment Skills: Pediatrics (1)**

Application of expanded nursing assessment skills to children. Includes assessment of growth and development, psychosocial, cognitive, and physical well-being of children of all age groups. (Lec. 1) Pre: credit or concurrent enrollment in 503 or permission of instructor.

### **505 Nursing Research (3)**

An overview and analysis of current research in nursing with special focus on patient care. Students will design a research project. (Seminar) Pre: a course in statistics, credit or concurrent enrollment in 500, or permission of instructor.

### **506 Independent Study in Nursing (2-6)**

Intensive study of a specific area of interest, a problem or issue in nursing under guidance of the faculty. (Independent Study) Pre: permission of graduate faculty.

### **507 Theories of Practice for Nursing (3)**

Analysis of general theories of practice for nursing and their applicability to various areas of clinical practice. (Seminar) Pre: 500 or permission of instructor.

### **510 Nursing Leadership in the Health Policy Process (3)**

Study of nurses' participation in the health policy process. Focus on theories for the development of nursing leaders. Analysis and application of creative nursing strategies for the enhancement of health care. (Seminar) Pre: enrollment in the M.S. program in nursing.

### **511 Advanced Mental Health Nursing I (3)**

Investigation of theories of healthy and psychopathological patterns of individual behavior from a mental health perspective. (Seminar) Pre: 500 and credit or concurrent enrollment in 512.

### **512 Practicum in Advanced Mental Health Nursing I (3)**

Field experience to develop competence in the practice of advanced mental health nursing. Emphasis on application of relevant theories in solving individuals' mental health problems. (Practicum) Pre: 500 and concurrent enrollment in 511.

### **515 Practicum in Advanced Psychiatric Mental Health Nursing (3)**

Field experience to further develop clinical competence in the practice of mental health nursing. Emphasis is placed on the utilization of intervention strategies based on knowledge of psychiatric illness. (Practicum) Pre: 511, 512.

### **516 Advanced Mental Health Nursing II (3)**

Theoretical analysis of current modes of advanced mental health intervention in order to explain strategies for solution of family, group, and community problems. (Seminar) Pre: 511, 512, and concurrent enrollment in 514.

### **517 Practicum in Advanced Psychiatric Mental Health Nursing III (3)**

Field experience to develop clinical competence in the practice of advanced mental health nursing in providing client care, consultation, education, and research. (Practicum) Pre: 515.

### **520 Graduate Study Seminar (1)**

A seminar designed to facilitate the synthesis and examination of information learned in the master's program about nursing knowledge development, advancement of nursing practice, and leadership role development. (Seminar) Pre: completion of 30 graduate program credits and concurrent enrollment in the final sequence of concentration courses.

### **521 Theoretical Study of Major Problems in Nursing Practice (3)**

Major theories and concepts for developing strategies in nursing practice. Emphasis on developing nursing strategies through theoretical analysis of problems viewed in the context of organizational and societal systems. (Seminar) Pre: 500 and concurrent enrollment in 522.

### **522 Practicum in the Study of Major Problems in Nursing Practice (3)**

Field study of major nursing problems with emphasis on examination, evaluation, and revision of nursing strategies for problems in the context of organizational and societal systems. (Practicum) Pre: 500 and concurrent enrollment in 521.

### **523 Contemporary Thanatology (3)**

Interdisciplinary approach to trends, problems, theories, and strategies in thanatology. Explores effects of professional's personal beliefs and attitudes on care provided to dying clients across the lifespan and their families. (Seminar) Pre: baccalau-

reate degree or senior standing with permission of instructor.

### **524 Exploring Loss Through Creative Arts Therapy (3)**

Exploration and assessment of the merits of incorporating creative arts processes (imagery, story, metaphor, music, and movement) with individuals who are experiencing loss, grief and dying. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

### **525 Spirituality of Loss and Death for the Helping Professions (3)**

Examination of major belief systems and spirituality during loss, death and grief. Emphasis on spiritual issues and ethnicity, culture, gender and developmental stage. Role of professional dealing with spiritual concerns. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

### **526 Loss Across the Lifespan (3)**

Content provides a basis both for personal development and professional growth. Personal experience, selected readings, and personal reflections will provide direction for examining the multidimensional aspects of loss. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

### **529 Topics in Thanatology (1-3)**

Selected areas of study pertinent to loss, dying and grief. Instruction may be offered in class seminar or clinical settings according to specific needs and purposes. May be repeated for credit with a change in topic. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

### **531 Primary Health Care Nursing I (3)**

Theoretical knowledge and skills for the development of nursing strategies in analyzing, managing, and preventing health-related problems common to primary health care clients. (Seminar) Pre: 500; 503 and 504.

### **532 Practicum in Primary Health Care Nursing I (3)**

Clinical application of theoretical knowledge and skills as presented in 531. Service learning. (Practicum) Pre: concurrent enrollment in 531.

### **533 Primary Health Care Nursing II (3)**

Theoretical study for the development of increased nursing competency in primary care practice. Emphasis on health care strategies to assist individuals and families in coping with health-related problems. (Seminar) Pre: 531, 532, and concurrent enrollment in 534.

### **534 Practicum in Primary Health Care Nursing II (6)**

Application of theoretical knowledge and skills for the development of nursing strategies for health

promotion and management of health-related problems common to families. (Practicum) Service learning. Pre: 531, 532, and concurrent enrollment in 533.

### **535 Pathophysiology for Advanced Practice Nurses (3)**

An in-depth study of pathophysiological phenomena across the life span from the biological life processes perspective. Clinical decision making based on the synthesis of this knowledge and current research findings will be explored. (Lec. 3) Pre: admission to graduate program in nursing or permission of instructor.

### **538 Learning Theories and Strategies for Health Professionals (3)**

The study of selected learning theories and strategies and their application in health professions. Emphasis will be on expanding the scope of teaching as professionals. (Lec 3) Pre: 500 or permission of instructor.

### **539 Application of Learning Theories in Professional Practice (3)**

Field project in the application of learning theories and strategies in professional practice. Emphasis on gaining knowledge of the application of strategies and outcome evaluation in practice and educational settings. (Practicum) Pre: Previous or concurrent enrollment in 538 or permission of instructor.

### **541 Advanced Study of Teaching in Nursing Education and Practice (3)**

Advanced study of educational theories and strategies having application in nursing education and practice. Emphasis will be on role development, instructional design, methods, and evaluation. (Lec. 3) Pre: 507, 539, or permission of instructor. In alternate years. Next offered 2003–04.

### **542 Practice in Nursing Education and Practice (6)**

A field experience designed to develop competence in teaching. Emphasis is placed on the instructional design component and the utilization of strategies based on theoretical knowledge. (Practicum) Pre: permission of instructor or previous or concurrent enrollment in 541. In alternate years. Next offered 2003–04

### **551 Theoretical Study of Nursing Administration (3)**

Study of relation of nursing philosophy, organizational theories, and practice environment to nursing administration. Emphasis on theories, concepts, and issues that explain and advance strategies in nursing administration. (Seminar) Pre: 505, 507, two restricted electives, or permission of instructor. In alternate years. Next offered 2003–04.

### **552 Practicum in Nursing Administration (6)**

Field experience in nursing administration. Emphasis on role development and the examination, de-

velopment, and implementation of strategies in nursing administration. (Practicum) Pre: Previous or concurrent enrollment in 551. In alternate years. Next offered 2003–04.

### **555 Advanced Gerontological Nursing I (3)**

Study of the theories of aging, age-related changes, and health needs of healthy older adults and those with minimal functional limitations using problem-strategy-theory approaches to nursing knowledge. (Seminar) Pre: 500 or permission of instructor. In alternate years. Next offered 2003–04.

### **556 Practicum in Advanced Gerontological Nursing I (3)**

Study of major problems and issues in advanced gerontological nursing through provision of nursing care to healthy older adults and those with minimal functional limitations. (Practicum) Pre: Concurrent or previous enrollment in 555. In alternate years. Next offered 2003–04.

### **557 Advanced Gerontological Nursing II (3)**

Analysis of theoretical and empirical knowledge necessary for care of frail older adults and those with complex health problems and functional limitations within acute and long-term care settings. (Seminar) Pre: 505, 507, 556. In alternate years. Next offered 2002–03.

### **558 Practicum in Advanced Gerontological Nursing II (6)**

Development, evaluation, and revision of theory-based strategies for selected nursing problems through provision of nursing care to older adults with multiple chronic and acute illnesses and functional limitations. (Practicum) Pre: Previous or concurrent enrollment in 557. In alternate years. Next offered 2002–03.

### **560 Ethical Theories, Nursing Practice, and Health Care (3)**

Analysis of philosophic positions, ethical theories, and moral principles important to professional nurses in their clinical, educative, and administrative practice. (Seminar) Pre: B.S. or B.A. in a health-related field, one course in philosophy and ethics, or permission of instructor.

### **562 Advanced Clinical Study of Nursing Practice in Critical Care (6)**

Study and application of the theories of practice and of biopsychosocial interaction in advanced critical care nursing. Analysis of patient problems and nursing strategies relevant to critical care patients. (Practicum) Pre: 500 and concurrent enrollment in 569. In alternate years. Next offered 2002–03.

### **569 Theoretical Study of Advanced Nursing (3)**

Theoretical foundations of advanced nursing practice. Emphasis is on the reciprocal nature of the re-

lationship between theories, client problems, and nursing strategies in the areas of advanced practice. (Seminar) Pre: 507, 521, 522, and concurrent enrollment in 562 or 564, or permission of instructor. Next offered fall 2002.

### **571 Theoretical Study of Well Women's Health Care (3)**

A study of major theories, client issues, and nurse-midwifery strategies used in the care of well women seeking gynecological health care. (Seminar) Pre: 500.

### **572 Practicum: Theoretical Study of Well Women's Health Care (3)**

Clinical application of the theoretical knowledge and interventions in the care of well women in ambulatory health care settings. (Practicum) Pre: prior or concurrent enrollment in 571.

### **573 Theoretical Study of the Childbearing Woman and Her Family (3)**

Within a systems perspective, theories are utilized to examine client issues related to the normal childbirth experience. Knowledge and skills relevant to nurse-midwifery strategies of normal childbirth are emphasized. (Seminar) Pre: credit or concurrent enrollment in 571, 572; concurrent enrollment in 574.

### **574 Practicum: Theoretical Study of the Childbearing Woman and Her Family (3)**

Theoretical application of nurse-midwifery strategies during the normal childbirth experience. Knowledge and skills relevant to patient care are emphasized. (Practicum) Pre: concurrent enrollment in 573.

### **575 Advanced Practice: Collaborative Nurse-Midwifery (3)**

Within a systems perspective, theories are utilized to examine client issues of the at-risk childbirth experience. Expanded nurse-midwifery strategies related to collaborative practice within the community are emphasized. (Seminar) Pre: concurrent enrollment in 576.

### **576 Advanced Practice: Collaborative Nurse-Midwifery Practicum (6)**

Field study of the clinical application of theoretical knowledge and skills in the at-risk childbirth experience. Use of collaborative practice and the management process within communities is emphasized. (Practicum) Pre: concurrent enrollment in 575.

### **577 Practice and Integration of Nurse-Midwifery (5)**

Comprehensive and practical application of clinical skills and theoretical knowledge in nurse-midwifery. Complete integration of the nurse-midwifery role with the client, family, and community. (Practicum) Pre: 575 and 576.

**582 Pharmacotherapeutics in Advanced Practice Nursing (3)**

Integration of pharmacotherapeutic and decision-making theories with human pathophysiology. Case management approach to the prescription of medications in primary health care across the life span. (Lec. 3) Pre: matriculation into master's program in nursing or permission of instructor.

**590 Directed Study and Practice in Advanced Clinical Nursing (3)**

In-depth and supervised clinical practice in a specialized area of nursing. (Independent Study) Service learning. Pre: graduate standing and permission of graduate faculty.

**601 Foundations of Nursing Science (3)**

Analysis of the nature of nursing knowledge from the historical and epistemological perspectives. Focus on examination of theoretical, ethical, and methodological foundations of the development of nursing science. (Seminar) Pre: enrollment in the Ph.D. program in nursing.

**602 Construction of Nursing Theory I: Inductive Process (4)**

Study of inductive approaches to generating theory relevant to nursing science. Examination of multidisciplinary strategies for generation of theory from field data. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor.

**603 Construction of Nursing Theory II: Deductive Process (3)**

Study of deductive theory-building as applied to nursing science. Focus on the nature of deductive theories and the application of deductive process to nursing theory construction. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor.

**621 Nursing Theory and Research in the Client Domain (3)**

In-depth, comparative analysis of existing nursing theories and research relevant to the client domain. Development of a research proposal for validation of a selected nursing theory. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing.

**631 Nursing Theory and Research in the Client-Nurse Domain (3)**

Study of theoretical and research work in the client-nurse domain. Formulation and testing of hypotheses dealing with client-nurse phenomena. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing.

**641 Nursing Theory and Research in the Practice Domain (3)**

In-depth analysis of theoretical and research work in the nursing domain of practice. The expansion and refinement of knowledge for nurse-system

phenomena of the practice domain. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing.

**651 Advanced Methods in Nursing Research I (3)**

In-depth study of theories and methods in sampling, research design, data collection, and data analysis, and their application to qualitative research in nursing. Emphasis on qualitative data collection methods. (Seminar) Pre: enrollment in the Ph.D. program in nursing, advanced statistics course, or permission of instructor.

**652 Advanced Methods in Nursing Research II (3)**

In-depth study of application of theories and methods in sampling, research design, data collection, data analysis for quantitative and evaluative research in nursing. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 651, or permission of instructor.

**653 Measurement and Instrument Development in Nursing Research (3)**

In-depth study of theories and methods relevant to measurement and instrument development for nursing and health sciences. Emphasis on measurement as an ongoing process of successive approximation, refinement, and validation. (Seminar) Pre: completion of 652 or permission of instructor.

**660 Philosophical Foundations for Health Care Research (3)**

Presentation of the historical and philosophical basis of contemporary health care research. (Seminar) Pre: enrollment in the Ph.D. program in nursing.

**671 Role Development in Nursing Research (3)**

In-depth examination of the role of the nurse researcher as a member of a multidisciplinary team and in academia. Emphasis on theories and issues related to researcher role development. (Seminar) Pre: doctoral standing in nursing, 601, 602 or 603, and 660.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**995 Reading and Research in Nursing (1-6)**

Advanced work by individual student on a selected issue in nursing under the direction of a faculty member. (Independent Study) Pre: graduate standing. S/U credit.

**Nutrition and Food Sciences (NFS)**

*Chairperson:* Professor Caldwell

**110 Introduction to Nutrition and Dietetics (1)**

Description of the educational and experiential requirements of a registered dietitian and a nutritionist. Career opportunities discussed. Designed for students entering the nutrition and dietetics major. (Lec. 1)

**207 General Nutrition (3)**

Fundamental concepts of the science of nutrition with application to the individual, community, and world. Proficiency test available. (Lec. 3) (N)

**227 Introduction to Food (3)**

Relationship of food to nutrition and organic chemistry. Use of nutrition guides to plan menus for populations of different ages and/or cultural backgrounds. (Lec. 2, Lab 2)

**236 Computer Applications in Food Science and Nutrition (1)**

Basic computer operation and the use and comparison of microcomputer software programs in food science and nutrition. (Lab. 2) Pre: 207.

**276 Food, Nutrition, and People (3)**

Practical applications of nutrition policy. Current issues in the socioeconomic, cultural, and psychological influences on food and nutrition behavior. (Lec. 3) Pre: 207.

**337 Applied Food Science (3)**

Application of the basic principles of food science. Physical and chemical changes in foods during processing, storage, and preparation. Laboratory application including assessment of food quality. (Lec. 2, Lab. 3) Pre: CHM 124 and 126.

**375 Food-Service Management I (3)**

Administrative responsibilities in planning, organizing, staffing, leading, and evaluating food-service systems. Emphasis on menu planning, purchasing, and food cost control. (Lec. 3) Pre: 207.

**376 Food-Service Management II (4)**

Administrative responsibilities in planning, organizing, staffing, leading, and evaluating food-service systems. Emphasis on food production and labor cost control. Experience in a food-service facility. (Lec. 3, Lab. 2) Pre: 375.

**386 Food Sanitation (3)**

Principles of sanitation as applied to the foodservice and food-processing industry. Emphasis on bacteria and other organisms causing food-borne illness, pest control, sanitation, and safe food handling. (Lec. 3) Pre: MIC 201, or permission of instructor.

**394 Nutrition in the Life Cycle I (3)**

Current issues in maternal and child nutrition with emphasis on nutrient requirements and food habit development; delivery of cost-effective quality nutrition services based on needs assessment, program planning, and evaluation. (Lec. 3) Pre: 276.

**395 Nutrition in the Life Cycle II (3)**

Current issues in nutrition for the adolescent and aging with emphasis on nutrient requirements related to physiological changes; screening initiatives; program development to reduce risk of nutrition-related diseases. (Lec. 3) Pre: 394.

**410 Professional Issues in Nutrition and Dietetics (1)**

Professional issues in the field of nutrition and dietetics. Topics include career choices; evaluation of journal articles; and registration, licensing, and certification. (Lec. 1) Pre: 395 and senior standing. Not for graduate credit.

**422 (or MIC 422) Biotechnology of Industrial Microorganisms (3)**

Application of microorganisms to industrial processes. Culture handling and strain development. Regulation and control of fermentation products. (Lec. 3) Pre: BCH 311 and an advanced course in microbiology, or permission of instructor.

**431 Biochemistry of Food (3)**

Introduction to the chemistry and biochemistry of the essential components common to foods of plant and animal origin. (Lec. 3) Pre: BCH 311 or equivalent.

**432 Food Processing (3)**

Changes involved in behavior of foods in unit operations such as fermentation, canning, chilling, freezing, dehydration, and concentration for processing and preservation. (Lec. 2, Lab. 3) Pre: 431 and MIC 211.

**434 Marine Food Processing (4)**

Theory and application in processing of finfish, shellfish, and seaweed from harvesting to product development, including identification of current issues. (Lec. 3, Lab. 3) Pre: 432 or permission of instructor.

**435 Food Product Development (4)**

Fundamentals of food product development from concept to production. Product design, formulation, basics of ingredient functions, manufacturing product evaluation, and safety and regulation. Individual product development project assignment. (Lec. 3, Lab. 3) Pre: 337 or 431 or permission of instructor.

**441 Advanced Human Nutrition (3)**

Comprehensive study of principles of nutrition. Physiological and metabolic processes and interrelationships involving nutrients. Factors affecting nutritional health status and requirements during life span. (Lec. 3) Pre: 207, BIO 242, BCH 311, or permission of instructor.

**443 Nutrition Assessment (3)**

Evaluation of nutritional status by dietary assessment, anthropometric measures, and nutrition-related health indicators. Practice in body composition assessment, interpreting dietary and laboratory data, and nutrition counseling. (Lec. 2, Lab. 2)

**444 Nutrition and Disease (3)**

Effect of disease on metabolism and nutritional requirements; implications for dietary change, and

factors affecting acceptance of such change. (Lec. 3) Pre: 441 or permission of instructor.

**451, 452 Field Experience in Food Science and Nutrition (1–3 each)**

Individual supervised field experience and seminar in community, educational, government, health-oriented, and commercial activities and services related to food science and nutrition. (Practicum) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. Not for graduate credit in food science and nutrition.

**458 Nutrition Education (3)**

Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research in and evaluation of nutrition education. (Lec. 3) Pre: 395, 441, or permission of instructor.

**491, 492 Special Projects (1–3 each)**

Advanced work under supervision of a staff member. Arranged to suit individual requirements of student. (Independent Study) Pre: senior standing and permission of chairperson.

**502 Physical Chemistry and Properties of Food (3)**

Principles of physical chemistry and properties of food material. Analysis of changes in physical properties and interaction of food components during physical processing. Application of underlying principles in food formulation and processing. (Lec. 2, Lab. 2) Pre: 431 or permission of instructor.

**505 Methods in Nutrition Research (3)**

Theory and laboratory experience in research methodology related to nutrition. Critical review of articles, completion of laboratory projects, and preparation of a research proposal. (Lec. 2, Lab. 2) Pre: 444 and STA 308 or permission of instructor.

**506 Nutrition in the Community (3)**

Exploration of the role of the nutrition professional in community needs assessment, intervention development and evaluation, and in forming domestic nutrition policy. (Lec. 3) Pre: 394 and 395 or permission of instructor.

**507 Applied Nutrition I (1)**

Selected topics in applied nutrition with an emphasis on medical nutrition therapy. (Lec. 1) Pre: 444 or permission of instructor.

**508 Applied Nutrition II (1)**

Selected topics in applied nutrition with an emphasis on community nutrition and foodservice management. (Lec. 1) Pre: 506 or permission of instructor.

**511 Food Science and Nutrition Seminar I (1)**

Reports and discussions of current topics in food science and nutrition, as well as oral reports of theses and dissertation research topics in progress. (Seminar) Pre: graduate standing or permission of chairperson.

**512 Food Science and Nutrition Seminar II (1)**

Critical review of oral presentations given in 511. Provides student with experience in communicative skills necessary to evaluate and critique scientific presentations. Attendance is required of all graduate students in residence when not enrolled in 511. (Seminar) Pre: graduate standing. S/U credit.

**548 Separations for Biotechnology**

See Chemical Engineering 548.

**551 Topics in Human Nutrition I (3)**

Digestion, absorption, and metabolic role of macronutrients and their interrelationships. Influence of environmental and physiological factors on nutrient use and energy balance. Critical review of the literature. (Lec. 3) Pre: 441, BIO 242, and BCH 311, or permission of instructor.

**552 Topics in Human Nutrition II (3)**

Absorption, metabolism, and role of micronutrients and their interrelationships. Critical review of the literature and implications for public policy. (Lec. 3) Pre: 441, BIO 242, and BCH 311, or permission of instructor.

**581 Internship in General Medical Nutrition Therapy (1–3)**

Supervised practice in medical nutrition therapy in a hospital setting. (Practicum) Pre: Acceptance into the Dietetic Internship Option.

**582 Internship in Advanced Medical Nutrition Therapy (1–3)**

Supervised advanced practice in medical nutrition therapy in a hospital setting. (Practicum) Pre: Acceptance into the Dietetic Internship Option.

**583 Internship in Foodservice Management (1–3)**

Supervised practice in foodservice management in a hospital setting. (Practicum) Pre: Acceptance into the Dietetic Internship Option.

**584 Internship in Community Nutrition (1–3)**

Supervised practice in community nutrition in a variety of community settings. (Practicum) Pre: Acceptance into the Dietetic Internship Option.

**585 Internship in Specialty Dietetic Practice (1–3)**

Supervised practice in specialty areas of dietetic practice in a variety of settings. (Practicum) Pre: Acceptance into the Dietetic Internship Option.

**591, 592 Special Research Problems (1–4 each)**

Advanced work under supervision of a staff member. Arranged to suit individual requirements of students. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**691, 692 Research in Food Science and Nutrition (1–3 each)**

Assigned research on an advanced level. Students are required to outline the problem, conduct the necessary literature survey and experimental work, and present their observations and conclusions in a report. (Independent Study)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**951 Dietetics Seminar: Clinical Nutrition (1–2)**

Discussion of current topics in clinical nutrition related to supervised experience. Limited to students enrolled in the Rhode Island AP4 Program. (Seminar)

**953 Dietetics Seminar: Food-Service Management (1–2)**

Discussion of current topics in food-service management related to supervised experience. Limited to students enrolled in the Rhode Island AP4 Program. (Seminar)

**Ocean Engineering (OCE)**

*Chairperson:* Professor Grilli

**101 Introduction to Ocean Engineering (1)**

Overview of ocean engineering topics pointing out the common areas with other engineering branches but emphasizing specific ocean applications. (Seminar) S/U only.

**215 Ocean Engineering Design I (1)**

Introduction to the design of systems in ocean engineering featuring team-based, hands-on projects. Integrated approach includes socioeconomic, environmental, operational, and professional development aspects. (Lec. 1)

**216 Ocean Engineering Design II (1)**

Continuation of 215 with increased project complexity and team independence. (Lec. 1) Pre: 215.

**301 Fundamentals of Ocean Mechanics (3)**

Mathematical methods for the analysis of ocean phenomena. Conservation laws for ocean systems. Theory and applications in ocean mechanics. (Lec. 3) Pre: MTH 243, MCE 263, ELE 220, CVE 220.

**307 Introduction to Engineering Wave Mechanics and Littoral Processes (3)**

Description of coastal area and the study of beach dynamics and coastal protection methods. Linearized water waves, velocity, pressure, and wave group sound energy. Wave refraction: diffraction, shoaling, and breaking. Waves and water-level prediction. Nearshore waves and current. Littoral transport. (Lec. 3) Pre: MCE 354 or permission of instructor.

**310 Basic Ocean Measurement (3)**

Basic ocean measurement and instrumentation exercises using boats and laboratories. Includes cruise design, navigation and mapping systems, sonar systems, water quality sensors, wave spectra, computer data acquisition, and signal processing. (Lec. 1, Lab. 2) Pre: ELE 220 or permission of instructor.

**311 Coastal Measurements and Applications (4)**

Exercises in basic coastal measurement from vessels, in situ, and in the laboratory. Experiments in measuring currents, surface elevation, wave and wave forces, geotechnical properties and applications, and acoustic propagation. (Lec. 2, Lab. 4)

**416 Ocean Engineering Professional Practice (2)**

Introduction to professional practice in Ocean Engineering, including contemporary issues in the field, career planning and placement, life long learning strategies, professional licensure process, publication and presentation, and project management. (Lec. 2) S/U only.

**421 Marine Structure Design (3)**

Review of wave mechanics; selection of design waves and water levels; design of rubble mound breakwaters; design of vertical breakwaters/seawalls; wave forces on vertical piles. (Lec. 3) Pre: 307.

**422 (or CVE 422) Offshore Structure and Foundation Design (3)**

Introduction to offshore structures and foundations, dynamic analysis, structural design for storms, design against fatigue failure, geotechnical site investigations, offshore foundation analysis and design. (Lec. 3) Pre: 421 and CVE 381 or permission of instructor. Not for graduate credit.

**425 Coastal Experiments (4)**

Basic coastal measurement techniques for coastal management. Experimental (field and laboratory) measurements of physical and geological parameters. Major student designed, operated, and reported experiment addressing a practical problem. (Lec. 2, Lab. 4) Not for credit in ocean engineering. Pre: MTH 107 or 108 or equivalent.

**471 Underwater Acoustics (3)**

Vibrations, the acoustic wave equation, duct acoustics, and sound pressure levels and spectra. Underwater acoustics including transducers, arrays, surface and bottom scattering, and ray propagation. (Lec. 3) Pre: 301. Not for graduate credit.

**472 Sonar Systems Design (3)**

Fundamentals of design of sonar systems. Effects of sound propagation in deep and shallow oceans, noise, scattering on system performance. Array, transducer, and signal design. Passive and active sonar applications. (Lec. 3) Pre: 471.

**483 Foundation Engineering**

See Civil and Environmental Engineering 483.

**491, 492 Special Problems I, II (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

**495 Ocean Systems Design Project I (3)**

Capstone design of an ocean system under the direction of a faculty advisor. Project must include engineering, economic, environmental, safety, and societal considerations. This is first of a two-course ocean engineering design sequence. Pre: senior standing. Not for graduate credit.

**496 Ocean Systems Design Project II (3)**

Capstone design of an ocean system under the direction of a faculty advisor. Project must include engineering, economic, environmental, safety, and societal considerations. This is second of a two-course ocean engineering design sequence. Pre: 495. Not for graduate credit.

**510 Engineering Ocean Mechanics (3)**

Fundamental equations of estuarine and coastal hydrodynamics. Scaling of governing equations. Long period waves including seiches, tides, storm surges, and tsunamis. Wind- and estuarine-induced circulation. Pollutant and sediment transport. (Lec. 3) Pre: MCE 354 or equivalent.

**514 Engineering Wave Mechanics and Nearshore Processes (3)**

Linear water wave boundary value problem. Engineering wave properties. Nonlinear waves (long waves, Stokes waves, stream function waves). Nearshore hydrodynamics and wave breaking. Fully nonlinear transient waves. (Lec. 3) Pre: MCE 455 or equivalent.

**515 Marine and Vehicle Hydrodynamics (3)**

Hydrodynamics of fixed and floating ocean structures (vehicles). Viscous, inviscid, and ideal fluid flows; and linear water waves involving bodies in unbounded fluid, floating bodies (in still water and in waves); ship waves; lifting surfaces. (Lec. 3) Pre: MCE 354 or equivalent or OCE 510 or 514; 307, 514 or equivalent.

**522 Dynamics of Waves and Structures (3)**

Deterministic analysis for SADO structures; MDOF dynamic analysis; distributed-parameter systems; linear and second-order Stokes wave theories; wave forces on cylinders; chaotic vibration of marine structures. (Lec. 3) Pre: MCE 464 or permission of instructor.

**534 Corrosion and Corrosion Control**

See Chemical Engineering 534.

**535 Advanced Course in Corrosion**

See Chemical Engineering 535.

**560 Introduction to Data Collection Systems (3)**

Practical problems of data collection. Probes and sensors, interfaces, signal conditioning, and stor-

age. Examples found among the current research areas within ocean engineering will be emphasized. (Lec. 3) Pre: graduate standing in engineering or permission of instructor. In alternate years. Next offered fall 2003.

### **561 Introduction to the Analysis of Oceanographic Data (3)**

Design of oceanic experiments to determine spatial and temporal sampling rate, precision, accuracy, signal-to-noise ratio, etc. Description of typical ocean data collection and analysis systems. Development of relevant techniques. (Lec. 3) Pre: IME 411, MTH 451, or equivalent.

### **565 Ocean Laboratory I (3)**

Measurements, experiments, operation of apparatus in the ocean and in the laboratory. Statistical theory, planning multivariable experiments, checking of data, etc. (Lec. 1, Lab. 6) Pre: graduate standing in engineering or oceanography, or permission of instructor.

### **571 (or ELE 571) Underwater Acoustics I (3)**

Introduction to sound generation, transmission, and reception, including vibration of mechanical systems, acoustic waves in fluids, acoustic transducers and arrays, acoustic propagation in the ocean, and sonar systems. (Lec. 3)

### **572 Underwater Acoustic Transducers (3)**

Theory, design, and calibration of electroacoustical transducers including: dynamical analogies and equivalent circuits, piezoelectric and magnetostrictive materials, transmitting and receiving responses, reciprocity and acoustic measurements. (Lec. 3) Pre: 471 or equivalent.

### **575 Marine Bioacoustics (3)**

Introduction to marine mammal hearing, sound production, and the uses of sound for communication and echolocation; dolphin sonars; analysis and processing of marine mammal signals including passive tracking; the effects of noise on marine mammals. (Lec. 3) Pre: 471 or permission of instructor.

### **581 Experimental Geomechanics**

See Civil and Environmental Engineering 581.

### **582 (or CVE 582) Seabed Geotechnics (3)**

Geotechnical engineering principles as applied to submarine slope stability, bearing capacity, anchoring; emphasis on effective stress principle, compressibility, and shear strength of marine sediments. (Lec. 3) Pre: CVE 381 or equivalent or OCE 311, or permission of instructor.

### **583 Advanced Foundation Engineering**

See Civil and Environmental Engineering 583.

### **591, 592 Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the

student. (Independent Study) Pre: permission of chairperson.

### **599 Master's Thesis Research (1–9)**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### **605, 606 Ocean Engineering Seminar (1 each)**

Seminar discussions including presentation of papers based on research or literature survey. (Seminar) Required of all resident graduate students. May be repeated for a maximum of 2 nonprogram credits. S/U credit.

### **661 Analysis of Oceanographic Data Systems (3)**

Design of systems for deep-ocean and estuarine data collection and processing. Space-time sampling, multivariate analysis, and convergence of moments as applied to ocean data estimation and system design. Current topics in ocean data systems. (Lec. 3) Pre: 560 or ELE 506 or equivalent.

### **672 (or ELE 672) Underwater Acoustics II (3)**

Sound transmission in ocean, transducers, active signal design for range and Doppler resolution, ambient and platform noise, classical and wave vector-frequency methods of beamforming, adaptive beamforming, characteristics of targets, and active/passive sonar systems. (Lec. 3) Pre: 571.

### **673 Advanced Course in Underwater Acoustic Propagation (3)**

Analysis of propagation from a concentrated acoustic source in the ocean by methods such as advanced normal mode theory, numerical integration, and Fast Fourier Transforms. Applications to ocean features such as surface ducts, shadow zones, deep-sound channel, etc. (Lec. 3) Pre: 571 or equivalent.

### **676 Acoustic Radiation from Underwater Vibrators (3)**

Fundamentals of acoustic radiation from submerged structures. Radiation from planar, cylindrical, and spherical surfaces. In-vacuo and in-fluid vibration of elastic bodies. Acoustic coincidence and fluid-loading effects on radiation from elastic bodies. (Lec. 3) Pre: 571 or permission of instructor.

### **677 Statistical Sonar Signal Processing**

See Electrical Engineering 677.

### **688 (or CVE 688) Marine Geomechanics (3)**

Integrated study of marine geotechnics and marine geology. Topics include sedimentary processes, acoustic characteristics, slope stability, consolidation and stress history, engineering properties and other subjects related to seabed utilization. (Lec. 3) Pre: CVE 381 or permission of instructor.

### **691, 692 Special Problems (1–6 each)**

Advanced work under supervision of a member arranged to suit the individual requirements of the

student. (Independent Study) Pre: permission of chairperson.

### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Oceanography (OCG)**

*Dean:* Professor Farmer

### **110 (or GEO 110) The Ocean Planet (3)**

Introduces the origin and structure of the solar system; interaction of earth's solid interior, oceans' atmosphere and biosphere with emphasis on earth science; energy resources and present environment on Earth. (Lec. 3) (N)

### **123 Oceans, Atmospheres, and Global Change (4)**

The impact of human activities on the oceans, atmospheric composition, and climate set against a background of natural processes in and history of global changes in climate and ecosystems. (Lec. 3, Lab. 3) (N)

### **131 Volcanoes and the Environment (3)**

General introduction to volcanic eruptions and their impact on the global environment and on human activity. Basic principles of the generation of magmas and their eruption at the earth's surface. (Lec. 3) (N)

### **401 General Oceanography (3)**

General survey in the major disciplines including geological, physical, chemical, and biological ocean sciences integrated into a conceptual approach to the coastal ocean. (Lec. 3) Pre: at least one laboratory course in a physical or biological science and junior standing or above. (N)

### **420 Deep-Sea Biology (3)**

Overview of the biology and ecology of the deep sea, including organisms and habitats, spatial and temporal patterns, physiology and adaptations, energetics, evolution and hydrothermal vent ecology. (Lec. 3) Pre: one semester general biology (BIO 100, 103, 104) and one semester general chemistry (CHM 101, 103) required. One semester ecology or oceanography recommended (OCG 123, 401, 451, BIO 455) Offered in alternate years.

### **451 Oceanographic Science (3)**

Oceanography for undergraduate science majors. The approach used is to present and apply basic physical, chemical, geological, and biological principles to the integrated study of the world ocean system. (Lec. 3) Pre: two semesters of MTH 131 and 132 or 141 and 142, one semester of CHM 101 and 102 or 191, one semester of PHY 111 and 185 or 203 and 273 or 213 and 285. A second semester of CHM 112 and 114 or 192 is recommended. Not for graduate credit in oceanography.

**480 Introduction to Marine Pollution (3)**

An introductory course in marine pollution emphasizing geochemical aspects of the sources, transport, and fate of pollutants in the coastal marine environment. (Lec. 3) Pre: one semester of general chemistry (CHM 101 or 103). One semester of general geosciences (GEO 100 or 103) is recommended. Not for graduate credit.

**483, 484 Laboratory and Research Problems in Physics**

See Physics 483, 484.

**491 Ocean Studies (15)**

Full-time intensive work experience with Graduate School of Oceanography research at Narragansett Bay Campus. Student expected to participate in research program, seminars, and other activities of Bay Campus. (Independent Study) Pre: junior standing in natural sciences, natural resources, or engineering, and permission of staff. Not for graduate credit in oceanography. S/U only.

**493, 494 Special Problems and Independent Study in Oceanography (1–6 each)**

Research in oceanography conducted as supervised individual study. (Independent Study) Pre: junior or senior standing in natural science, natural resources, or engineering, and permission of instructor. S/U only.

**501 Physical Oceanography (3)**

Basic course covering physical properties of seawater, heat budget, distribution of variables, dynamics, water masses and general circulation, waves and tides. (Lec. 3) Pre: PHY 213 and MTH 141.

**505 Marine Analytical Chemistry (3)**

Application of analytical methods to marine problems with emphasis on understanding basic methods and instruments. Combines general principles with practical experience. Students conduct analytical projects in the laboratory. (Lec. 1, Lab. 2) Offered every fall.

**510 Descriptive Physical Oceanography (3)**

Observed distributions of temperature, salinity, currents; methods of deducing deep flow; physical properties of seawater; flow in estuaries; practical work in the analysis of oceanographic data; study of recent literature. (Lec. 3) Pre: 501.

**517 Foundations of Earth System Dynamics (3)**

Introduction to the fundamental principals underlying fluid dynamics as applied to the study of specific problems and processes in earth, marine and environmental sciences. Basics of numerical modeling are covered. (Lec. 3) Pre: MTH 141 and 142, or equivalent.

**521 Chemical Oceanography (3)**

Processes regulating the composition of seawater and the distribution of chemical species. The interaction of marine chemistry with the ocean floor,

atmosphere, and marine organisms. (Lec. 2, Lab. 2) Pre: CHM 101 and 112 and PHY 213.

**523 Organic Geochemistry of Natural Waters (3)**

Chemistry of organic matter in natural waters with emphasis on the marine environment. Topics include a consideration of the origin, nature, and biogeochemical reactions of organic matter in aquatic environments. (Lec. 3) Pre: CHM 228 or permission of instructor. Offered in odd-numbered years.

**524 Chemistry of the Marine Atmosphere (3)**

Chemistry and physics of marine aerosols, trace gases, and precipitation; cycles and budgets of atmospheric nitrogen, sulfur, halogen, and carbon compounds; effects of man on the marine atmosphere. (Lec. 3) Pre: 521 and CHM 432 or permission of instructor. Offered in odd-numbered years.

**531 Synoptic and Dynamic Meteorology (3)**

Observed structure of atmosphere; principles of balanced flows, waves, and disturbances. Observations and models of storm formation, semipermanent features, and general circulation. Relationship between weather and climate. (Lec. 3) Pre: PHY 203 or permission of instructor. Offered in odd-numbered years.

**533 Graduate Writing in Marine and Environmental Sciences (3)**

Graduate writing in marine and environmental sciences; writing and editing journal articles and abstracts; principles and practice in scientific writing. Pre: graduate standing and WRT 101, or permission of instructor.

**540 Geological Oceanography (3)**

Origin and evolution of the ocean basin and its margin: morphology, structure, plate tectonics, volcanism, geochemistry, stratigraphy, sedimentation, and paleoceanography. (Lec. 2, Lab. 2) Pre: GEO 103 or permission of instructor.

**545 Volcaniclastic Sedimentation (3)**

Generation of volcanic particles by explosive volcanism, the processes by which they are dispersed on land and in the sea, and physical characteristics of their deposits in different volcanic environments. (Lec. 3) Pre: 540 or permission of instructor.

**552 Marine Geophysics (3)**

Survey of basic subdisciplines of marine geophysics including plate tectonics, gravity, magnetics, heat flow, reflection and refraction seismology. Basic theory and methods of data collection and interpretation emphasized. (Lec. 3) Pre: 540 or permission of instructor. Offered in odd-numbered years.

**561 Biological Oceanography (4)**

Dynamics of marine ecosystems; patterns of production and distribution of plankton, benthos, and nekton in relationship to their environment. (Lec. 3, Lab. 2) Pre: general ecology.

**574 Biology of Marine Mammals (3)**

Migration, reproduction, social organization, classification, anatomy, populations, physiology, and communications of cetaceans and pinnipeds. (Lec. 2, Lab. 2) Pre: permission of instructor. In alternate years. Next offered spring 2002.

**576 (or MIC 576) Marine Microbiology (4)**

The role of bacteria, fungi, apochlorotic algae, flagellates, sarcodines, and ciliates in the cycling of organic matter is discussed in the context of their structure, habitats, trophic modes, ecology, processes, and taxonomy. (Lec. 3, Lab. 3) Pre: CHM 112 and MIC 201 or 211 or permission of instructor. Offered in odd-numbered years.

**580 Introduction to Marine Pollution (3)**

An introductory course in marine pollution emphasizing geochemical aspects of the sources, transport and fate of pollutants in the coastal marine environment. Review papers or research proposals will be required. (Lec. 3) Pre: one semester of general chemistry (CHM 101 or 103). One semester of general geosciences (GEO 100 or 103) is recommended.

**591, 592 Individual Study (1–6)**

Individual study of assigned topics or special problems involving literature search and/or original investigation under one or more members of the staff. (Independent Study)

**593, 594 Special Studies (1–4 each)**

Studies of specialized topics in the marine sciences. (Independent Study)

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**605 Dynamical Oceanography (3)**

Simple steady-state theories applied to ocean motion. Review of well-known force balances in oceanography, wind-driven circulation, thermohaline circulation, the thermocline, oceanic boundary layers, nearshore circulation, diffusion. (Lec. 3) Pre: 501.

**610 Geophysical Fluid Dynamics I (3)**

Natural world fluid dynamics emphasizing ocean circulation. Classical fluid dynamics; GFD fundamentals (rotation and stratification); Taylor-Proudman theorem; potential vorticity; planetary waves; geostrophic contours; shallow water quasi-geostrophic theory; frictional layers. (Lec. 3) Pre: 605 or permission of instructor.

**611 Geophysical Fluid Dynamics II (3)**

Continuously stratified quasi-geostrophic theory; classical and modern theories of the wind-driven ocean circulation; stability theory; oceanic convection; wave-mean flow interactions; ageostrophic dynamics; topographical effects. (Lec. 3) Pre: 610 or permission of instructor.

**613 Waves (3)**

Generation, propagation, and decay of surface waves, internal waves, and Rossby waves in the ocean. (Lec. 3) Pre: MCE 550 or permission of instructor.

**614 Tides (2)**

Generation, propagation, and dissipation of ocean tides. Earth tides. Relation between theory and observation. Tidal analysis. (Lec. 2) Pre: 501.

**620 Chemical Distributions (3)**

Interdisciplinary study of the processes responsible for oceanic chemical distributions with emphasis on conservative properties, biologically active constituents, and radionuclides. Includes projects involving data-processing analysis. (Lec. 3) Pre: 501, 521, 540, and 561 or permission of instructor.

**623 Physical Chemistry of Seawater (3)**

Characterization of dissociation, solubility, and redox equilibria in seawater. Partial molar volumes, conductivity, and diffusion of ions in seawater. Kinetic studies in seawater; effect of temperature, salinity, and pressure on physiochemical properties in seawater. (Lec. 3) Pre: 521 and CHM 432 or permission of instructor. Offered in odd-numbered years.

**625 Organic Geochemistry of Sediments (3)**

Chemistry of organic matter in recent to ancient sediments. Topics include the source, characterization, significance, and fate of sedimentary organic compounds with emphasis on the marine environment. (Lec. 3) Pre: 523 or permission of instructor. Offered in even-numbered years.

**628 High-Temperature Geochemistry (3)**

Principles and factors governing the distribution of trace elements in volcanic processes. Applications to the study of rock genesis, mantle dynamics, oceanic crust formation, and hotspots. (Lec. 3) Pre: CHM 431 or equivalent, or permission of instructor. Offered in even-numbered years.

**631 Seminar in Marine and Atmospheric Chemistry (1)**

Discussion of problems of current interest in marine chemistry. (Seminar) Pre: 521 or permission of instructor. S/U credit.

**640 Marine Particles (3)**

Discussion of the chemical, biological, and physical processes that control particle formation, transformation, and sedimentation in the oceans. Pre: permission of instructor.

**643 Subduction Zones (3)**

Structure, petrology, and geochemistry of subduction zones, island arcs, and other magmatic arcs at convergent plate margins. Petrogenesis of andesites and related magmas. (Lec. 3) Pre: 540 or permission of instructor.

**645 Petrology of the Oceanic Crust (3)**

Nature and origin of igneous and metamorphic rocks of the oceanic crust of the earth; mineralogy, petrology, and petrogenesis of seafloor rocks; metamorphism of the ocean crust. (Lec. 3) Pre: graduate standing or permission of instructor.

**649 Plankton Paleoecology (3)**

Concepts of paleoecology. Interaction between planktonic marine organisms and their environment over evolutionary time scales. The use of fossil plankton in reconstructing paleoenvironmental conditions and paleoecological systems. Patterns, causal hypotheses, and geological consequences of temporal and geographic variation in Cretaceous and Cenozoic plankton assemblages. (Lec. 2, Lab. 2) Pre: permission of instructor.

**651 Marine Stratigraphy (3)**

Concepts and methods of biostratigraphy, lithostratigraphy, and chronostratigraphy. Stratigraphic nomenclature. Stratigraphic correlation and completeness. Special focus will be placed on the integration of multiple stratigraphic techniques and their application to the Cretaceous and Cenozoic marine record. Class discussion of advances and problems in recent research articles. (Seminar) Pre: permission of instructor. Offered in odd-numbered years.

**655 Paleomagnetism and Geomagnetism (3)**

Earth's magnetic field, origin and dynamo theory, rock magnetism and paleomagnetism, field directions in rocks and sediments, and temporal variation. Magnetic recording by ridges and seamounts; forward/inverse modeling, skewness analysis. (Lec. 3) Pre: 540 or permission of instructor. Offered in even-numbered years.

**661 (or BIO 661) Phytoplankton Taxonomy (3)**

Classical and modern systems and techniques for the identification, nomenclature, and classification of planktonic algae, with emphasis on marine forms. Phylogeny will be briefly considered. (Lec. 1, Lab. 4) Pre: permission of instructor. Offered in even-numbered years.

**663 (or BIO 663) Phytoplankton Physiology (3)**

Metabolic processes and methods of their investigation in phytoplankton with primary emphasis on functions pertinent to their ecology. Includes adaptation, uptake of nutrients, excretion, rhythms, pigments, and photosynthesis. (Lec. 3) Pre: graduate standing or permission of instructor.

**664 (or BIO 664) Phytoplankton Ecology (3)**

Biology and ecology of the pelagic marine microscopic algae with emphasis on their adaptations, physiological ecology, distribution, succession, production, and regional and seasonal dynamics. (Lec. 3) Pre: permission of instructor.

**665 Marine Bio-Optics and Remote Sensing (3)**

Bio-optical properties of ocean waters. Major focus is on basic principles of visible-band ocean remote sensing and its application to determining phytoplankton pigment and production at regional to global scales. (Lec. 2, Lab. 2) Pre: 561. Offered in odd-numbered years.

**666 Zooplankton (3)**

Biology of marine zooplankton, dealing with morphology, adaptation, distribution, physiology, production, and interrelationships with other members of the marine biota. (Lec. 1, Lab. 4) Pre: permission of instructor.

**668 Productivity of Ocean Margins (3)**

Processes affecting biological productivity of ocean margin waters. Major focus on dynamics of production in mid to outer shelf waters and adjacent boundary currents. (Lec. 3) Pre: 501, 561. Offered in even-numbered years.

**669 Marine Fish Ecology and Production (3)**

Functioning of fishes in major world ecosystems is explored through comparison of feeding ecology, bioenergetics, and production rates. (Lec. 2, Lab. 2) Pre: 561 or permission of instructor.

**670 Fish Population Dynamics (3)**

Methods for estimating vital statistics of fish populations, stock assessment theory and methods, analytical and empirical model development, and fisheries forecasting. (Lec. 3) Pre: graduate standing or permission of instructor.

**671 Marine Zooplankton Ecology (3)**

Marine zooplankton community structure and function including the relation of spatial and temporal distribution patterns to the oceanic environment, organism interactions, secondary production, feeding, and reproduction. Emphasis on open-ocean communities. (Lec. 3) Pre: 561 or permission of instructor.

**673 Fisheries Oceanography (3)**

Physical and biological processes acting at the egg, larval, juvenile, and adult stages of commercially important fish and shellfish. Topics include: growth, survival, and recruitment dynamics; larval dispersal and fish distributions; changes in long-term abundance in relation to climate. (Lec. 3) Pre: graduate standing or permission of instructor. 501, 561 recommended. Offered in odd-numbered years. Next offered fall 2003.

**678 Low-Temperature Geochemistry and Isotope Geology (3)**

A study of processes important in determining the chemical and isotopic mass balance of the oceans and the geochemistry of deep-sea sediments. (Lec. 3) Pre: 521.



**679 (or BIO 679) Animal Communication (2)**

Visual, chemical, and auditory communication in animals, including receptor systems, feedback, and redundancy. Functional aspects and organization of communication. Discussion of readings. Research problem can be taken under 691 or BIO 691. (Lec. 2) Pre: BIO 467 or equivalent and permission of instructor. In alternate years.

**689 Coastal Marine Ecosystems (3)**

Basic principles of estuarine and coastal ecology. Offered spring semester only. Two 1-hour lecture-discussion sessions per week. (Lec. 3) Pre: undergraduate or graduate science major, basic ecology course.

**691, 692 Individual Study (1–6 each)**

Individual study of assigned topics or special problems involving literature search and/or original investigation under one or more members of the staff. (Independent Study)

**693, 694 Special Studies (1–4 each)**

Studies of specialized topics in the marine sciences. (Independent Study)

**695 Seminar in Oceanography (1 each)**

Students give seminar reports on problems and current research in various areas of oceanography. (Seminar) Attendance and registration are required of all graduate students in residence, but no more than 2 credits are allowed for a program of study. S/U credit.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Oceanography Topics for Teachers (0–3)**

Especially designed for teachers of physical sciences. Basic topics in oceanography from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

*Note: Graduate students in oceanography choose from supporting courses in other departments.*

**Pharmacy (PHC)**

Dean: Professor Letendre

**305 Introduction to Information Technology in Pharmacy (3)**

Introduction to and use of drug information databases in pharmacy and pharmaceutical sciences. (Lec. 3)

**317 Interactive Learning Session I (1)**

Small group active learning sessions designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the de-

livery of pharmaceutical care. (Seminar) Pre: third-year standing or permission of instructor.

**327 Interactive Learning Session II (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: third-year standing permission of instructor.

**417 Interactive Learning Session III (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fourth-year standing or permission of instructor.

**427 Interactive Learning Session IV (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fourth-year standing or permission of instructor.

**517 Interactive Learning Session V (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fifth-year standing or permission of instructor.

**527 Interactive Learning Session VI (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fifth-year standing or permission of instructor.

**594 Experiential Tracking Practicum (7)**

Students will select one area to provide hands-on experience in acquiring, interpreting, and applying information to a specific practice field. This will be accomplished by collaborative work with a sponsor. Students should select one related topic area that will complete their tracking requirements. (Practicum) Pre: sixth-year standing. Not for graduate credit.

- A. Community Practice
- B. Pharmacotherapy
- C. Hospital Drug Information
- D. Community Practice Drug Information
- E. Clinical Database Development
- F. Drug Development and Regulation
- G. Cosmetics and Personal Care
- H. Biomedical Science Research
- I. Formulation Research
- J. Pharmacoeconomics and Pharmacoepidemiology

**Pharmacy Practice (PHP)**

Chairperson: Professor Hume

**311 Foundations of Human Disease I: Immunoinflammatory Disease**

See Biomedical Sciences 311.

**312 Foundations of Human Disease II: Central Nervous System Disease**

See Biomedical Sciences 312.

**324 Pharmacotherapy of CNS and Musculoskeletal Disorders—Therapeutics I (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of data to design, monitor, and modify drug therapy in psychiatric, neurologic, and musculo-skeletal diseases. (Lec. 2) Pre: third-year standing or permission of instructor.

**350, 351 Introductory Practice Experience I and II (1 each)**

Structured practical experience in institutional and community pharmacy settings. (Practicum) Pre: third-year standing.

**360 Hospital Pharmacy (3)**

Introduction to practice of pharmacy in hospitals, including both professional and administrative activities. Field trips to representative hospital pharmacies. (Lec. 3) Pre: third-year standing.

**404 Pharmacokinetics II**

See Applied Pharmaceutical Sciences 404.

**409 Foundations of Human Disease III: Infectious and Pulmonary Processes**

See Biomedical Sciences 409.

**410 Foundations of Human Disease IV: Endocrinology, Oncology, Medicinal Genetics, GI**

See Biomedical Sciences 410.

**411 Biostatistics II**

See Statistics 411.

**413 Pharmacotherapy of Infectious Diseases—Therapeutics II (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in infections and pulmonary diseases. (Lec. 2) Pre: fourth-year standing or permission of instructor.

**414 Pharmacotherapy of Endocrine and GI Disorders—Therapeutics III (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in endocrine and gastrointestinal disease. (Lec. 2) Pre: fourth-year standing or permission of instructor.

**420 Biotechnology Products in Pharmacy**  
See Biomedical Sciences 420.

**430 Advanced Infectious Diseases and Pulmonary Pharmacotherapy (3)**

Advanced topics in infectious diseases and pulmonary pharmacotherapy through literature review, data interpretation, and case scenarios. Content will be delivered through the perspective of clinical pharmacists. (Lec. 3) Pre: 413. Not for graduate credit.

**440 Pharmaceutical Care for Special Populations (3)**

Pharmacotherapy needs of infants, children, adolescents, and the elderly with a focus on pharmacokinetic, pharmacodynamic, and other age-associated changes will be addressed. (Lec.3) Pre: fourth-year standing in the Doctor of Pharmacy program; enrollment in the community pharmacy track, or permission of the instructor.

**450, 451 Introductory Practice Experience III and IV (1 each)**

Structured practical experience in institutional and community pharmacy settings. (Practicum) Pre: fourth-year standing. Not for graduate credit.

**460 Palliative Care (3)**

Principles of palliative care including control of pain and other symptoms, and psychological, social, and spiritual issues. (Lec.3) Pre: fourth or fifth-year standing in Pharm.D. program or permission of instructor. Not for graduate credit.

**484 Institutional Pharmacy Externship (5)**

Structured practical experience in selected institutional pharmacies. Participation in drug distribution, inventory control, drug utilization review, and other aspects of contemporary pharmacy practice. (Practicum 40 hours per week) Pre: 455, 456, 471; APS 461, 462; BMS 444, 455, and 456. Not for graduate credit. Last offered spring 2003.

**485 Community Pharmacy Externship (5)**

Structured practical experience in selected community pharmacies. Participation in patient counseling, drug distribution, and other aspects of contemporary pharmacy practice. (Practicum 40 hours per week) Pre: 455, 456, 471; APS 461, 462; BMS 444, 455, and 456. Not for graduate credit. Last offered spring 2003.

**486 Specialty Externship (3-6)**

Structured practical experience in institutional, community, and nontraditional pharmacy settings. (Practicum) Pre: permission of chairperson. May not be taken concurrently with 484, 485, or 490. May be repeated for a maximum of 12 credits. Not for graduate credit.

**497, 498 Special Problems (1-3 each)**

Methods of carrying out a specific research project. Literature search, planning, laboratory work, writ-

ing an acceptable report. (Independent Study) Pre: permission of chairperson.

**499 Specialty Clerkship (3-6)**

Faculty-supervised clinical pharmacy experience in affiliated institutional and ambulatory health care settings. Development of pharmaceutical care skills in various specialty areas. (Practicum) Pre: permission of chairperson. May not be taken concurrently with 485 or 490. May be repeated for a maximum of 12 credits. Not for graduate credit.

**510 Foundations of Human Disease V: Renal and Cardiovascular Diseases**

See Biomedical Sciences 510.

**511, 512 Advanced Pharmacotherapeutics (3 each)**

The clinical use of medications in a disease-oriented approach. The basic concepts of pharmacology, pharmacy, pathophysiology, and biochemistry will be correlated to the treatment of disease. (Lec. 3) Pre: fifth-year standing in the Doctor of Pharmacy program or permission of instructor. Must be taken concurrently with 561, 562.

**513 Pharmacotherapy of Oncology and Toxicology—Therapeutics IV (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in cancer, blood disorders, and overdose conditions. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**514 Pharmacotherapy of Renal and Cardiovascular Disorders—Therapeutics V (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in renal and cardiovascular disease. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**515 Pharmacy Practice Laboratory I**

See Applied Pharmaceutical Sciences 515.

**516 Pharmacy Practice Laboratory II**

See Applied Pharmaceutical Sciences 516.

**518 Self-Care I**

See Biomedical Sciences 518.

**519 (or BMS 519) Self-Care II (3)**

Expansion of nonprescription and complimentary medicine therapeutics. Explore the implementation of pharmaceutical care programs in community pharmacy practice. (Lec. 3) Pre: 518 (or BMS 518) fifth-year standing. Next offered spring 2003.

**520 Advanced Gastrointestinal and Endocrine Pharmacotherapy (3)**

Provides students with an expanded knowledge base in the area of GI and endocrine pharmacotherapy, emphasizing active learning, literature evaluation, data interpretation. (Lec. 3) Pre: fifth-

year standing in the Doctor of Pharmacy Program; enrollment in the pharmacotherapy track, or permission of instructor. Not for graduate credit. Next offered spring 2003.

**542 Evaluation of Controversies in Drug Literature (3)**

Through critical review of literature, controversies in drug therapy and drug-associated illness will be evaluated to improve students knowledge and analytical skills. (Lec. 3) Pre: fourth-year standing in the College of Pharmacy, or permission of instructor.

**544 Physical Assessment (1)**

Organ system approach to components of physical examination and evaluation. Emphasis is placed on understanding those physical signs and symptoms which may be drug-induced. Practice skills are introduced. (Lec. 3) Pre: enrollment in the Doctor of Pharmacy program or permission of instructor.

**555 Advanced Neuropsychiatric Pharmacotherapy (3)**

Comprehensive and advanced course on the pharmacotherapy of psychiatric and neurological diseases. Use of clinical case studies, evaluation of the primary literature, and other forms of interactive teaching will be emphasized. (Lec) Pre: 324, 312 or BMS 312, BMS 322 or permission of the instructor

**560 Advanced Cardiovascular and Renal Pharmacotherapy (3)**

Advanced assessment and pharmacotherapeutic management of patients with cardiovascular and renal disease through the application of evidence-based medicine and critical evaluation of literature. (Lec. 3) Pre: fifth-year standing in the Doctor of Pharmacy Program; enrollment in the pharmacotherapy track, or permission of instructor. Not for graduate credit.

**561, 562 Advanced Human Pathophysiology (4 each)**

The etiology, epidemiology, pathology, and clinical laboratory manifestation of diseases occurring in humans. This intensive course will be taught in a biomedical format. (Lec. 4) Pre: fifth-year standing in the Doctor of Pharmacy program or permission of instructor.

**581, 582 Clinical Pharmacy Seminar (1 each)**

Presentations made by students on appropriate advanced clinical pharmacy topics. (Seminar) Pre: fifth- or sixth- year standing in the Doctor of Pharmacy program or permission of instructor.

**590 Advanced Clinical Pharmacy Clerkship (5)**

Clinical practice in providing optimal pharmaceutical care for patients through designing, recommending, implementing and modifying patient-specific pharmacotherapy in collaboration with other health professionals. (Five credits taken five times for a total of 25 credits.) (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy program.

**591 Clinical Clerkship (7)**

Through direct clinical contact, students will learn how to provide optimal pharmaceutical care for patients. Students will collect and interpret data to design, recommend, implement, and modify patient-specific pharmacotherapy in collaboration with other health care professionals. (Practicum 7.5 weeks) Pre: sixth-year standing.

**592 Clinical Clerkship (7)**

Through direct clinical contact, students will learn how to provide optimal pharmaceutical care for patients. Students will collect and interpret data to design, recommend, implement, and modify patient-specific pharmacotherapy in collaboration with other health care professionals. (Practicum 7.5 weeks) Pre: sixth-year standing.

**593 Clinical Clerkship (7)**

Through direct clinical contact, students will learn how to provide optimal pharmaceutical care for patients. Students will collect and interpret data to design, recommend, implement, and modify patient-specific pharmacotherapy in collaboration with other health care professionals. (Practicum 7.5 weeks) Pre: sixth-year standing.

**Philosophy (PHL)**

*Chairperson:* Professor Zeyl

**101 Logic: The Principles of Reasoning (3)**

Introduction to logic, presentation of evidence in basic valid argument forms. Emphasis on effective communication by considering such topics as definitions and avoidance of fallacies. (Lec. 3) (C)

**103 Introduction to Philosophy (3)**

Pursues such basic questions as: What is a person? What is knowledge? Are we free? What is moral right and wrong? Does God exist? What is the meaning of death? (Lec. 3) Not open to students with 9 or more credits in philosophy. (L)

**204 Theories of Human Nature (3)**

An introduction to philosophical inquiry by critical examination of some major traditional and contemporary views of human nature as expressed in a variety of religious, literary, scientific, and philosophical writings. (Lec. 3) (L)

**205 Philosophical Topics (3)**

An intensive study of one or more problems, issues or topics of classical or current interest in philosophy. Emphasis on the analysis and construction of arguments relevant to the topic(s). Small class format. (Lec. 3)

**210 Women and Moral Rights (3)**

An introduction to the philosophical problems raised by reproduction, affirmative action, pornography, gender roles, and sexism in language through a critical examination of these issues. (Lec. 3) (L)

**212 Ethics (3)**

Evaluation of major ethical theories. Application of moral reasoning to topics such as virtue and vices, human dignity, conscience, responsibility, moral dilemmas, and reasons to be moral. (Lec. 3) (L)

**215 Science and Inquiry (3)**

The objective is to survey both the influence of philosophy on science and the influence of science on philosophy, all from a western historical perspective. (Lec. 3) (L)

**217 Social Philosophy (3)**

A systematic introduction to the philosophical problems of contemporary social relations: models of community, sources of alienation, property and ownership, the meaning of work and technology, human rights and freedom. (Lec. 3) (L)

**235 Modern Thought: Philosophy and Literature**

See Comparative Literature Studies 235.

**314 Ethical Problems in Society and Medicine (3)**

Ethical analysis of topics such as war, capital punishment, sexual morality, suicide, animal rights, honesty and deception, world hunger, discrimination, abortion. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**316 Engineering Ethics**

See Engineering 316. (L)

**318 Power/Justice: Contemporary Critical Philosophies (3)**

Study of contemporary critical philosophies in the traditions of Marxism, existentialism, post-modernism, and feminism, with emphasis on philosophers such as Habermas and Foucault. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**321 Ancient Philosophy (3)**

Survey of major thinkers and schools of thought in Ancient Greece, including selected pre-Socratics, Plato, and Aristotle. (Lec. 3) (F) (L)

**322 Medieval Philosophy (3)**

Survey of major thinkers and schools of thought in the Middle Ages, including Augustine, Anselm, Aquinas, and Ockham. (Lec. 3) (F) (L)

**323 Modern Philosophy: Descartes to Kant (3)**

Survey of 17th- and 18th-century European philosophy. Includes, but is not limited to, empiricism, rationalism, and Kant's critical philosophy. (Lec. 3) (F) (L)

**324 Recent European Philosophy (3)**

Nineteenth- and twentieth-century British and European continental developments. Discussion of movements such as idealism, utilitarianism, existentialism, and phenomenology and of philosophers such as Hegel, Kierkegaard, Mill, Husserl, Sartre, and Heidegger. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**325 American Philosophy (3)**

A study of American philosophy including such movements as puritanism, transcendentalism, pragmatism, naturalism, process-philosophy, realism, and philosophical analysis. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**328 The Philosophy of Religion (3)**

A systematic and critical consideration of such topics as the existence and nature of God, the problem of evil, the relation of faith to reason, religious language, miracles, and immortality. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**331 East Asian Thought (3)**

A study of the important philosophical and religious systems of China, Korea, and Japan; emphasis on Chinese traditions. (Lec. 3) (F) (L)

**341 Introduction to Metaphysics (3)**

Analyzes topics such as person, mind-body, human action, freedom and determinism, causation, time, space, essence and existence, universals, and types of beings. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor.

**342 Knowledge, Belief, and Truth (3)**

Analysis of topics such as knowledge, belief, certainty, doubt, skepticism, faith, the ethics of belief, truth, error, perception, a priori knowledge, subjectivity and objectivity, and memory. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor.

**346 Existential Problems in Human Life (3)**

Discussion of ultimate questions of human existence such as meaning in life, personal commitment, human relations, suffering, despair, hope, freedom, authenticity, self-deception, death, God, and immortality. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**355 Philosophy of Art (3)**

Systematic problems arising from reflection on the creation and perception of works of art. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. (L)

**401, 402 Special Problems (3 each)**

Course may vary from year to year, allowing one or more advanced students to pursue problems of special interest with guidance of instructor in conferences. One or more written papers. (Independent Study) Pre: 3 credits in philosophy and permission of instructor. May be repeated for credit.

**430 Philosophy of Law (3)**

Critical evaluation of the basis of legal authority and legal decision making, covering topics in the areas of analytic and ethical jurisprudence as well as professional ethics for lawyers. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course, and one 300-level PHL course, or permission of instructor.

**451 Symbolic Logic (3)**

Selected topics in modern symbolic logic including calculus of propositions, predicate calculus, and modal logics. Philosophical and mathematical aspects of the subject. (Lec. 3) Pre: 101 or MTH 131 or higher or permission of instructor.

**452 Philosophy of Science (3)**

Analysis of the nature and structure of scientific thought. Consideration of issues such as structure and types of scientific explanation, verification and falsification, and unity of the sciences. (Seminar) Pre: 101, 215, or 451, one 300-level PHL course, and 6 credits of natural science; or permission of instructor.

**453 Philosophy of the Social Sciences (3)**

Examination of philosophical problems raised by contemporary social sciences: the meaning of scientific knowledge, the nature of understanding of other persons and cultures, the relation of theory and practice. (Seminar) Pre: 101 or 103 or 204 or permission of instructor.

**454 Philosophy of the Natural Environment (3)**

An exploration of our problematic relationship to the natural environment: nature's ontological status, the epistemological encounter with nature through science and art, and the ethical obligations emerging from these considerations. (Seminar) Pre: 101 or 103 or one 200-level course and one 300-level course in philosophy, or permission of instructor.

**490 Senior Seminar in Philosophy (3)**

In-depth study of the major works of a significant Western philosopher or of a major philosophical topic. (Seminar) Pre: senior standing in philosophy or permission of instructor. May be repeated for credit.

**499 Senior Thesis (3)**

Independent research. Student works in close conjunction with a faculty member on a mutually agreeable topic. Written thesis required. (Independent Study) Pre: senior standing and permission of instructor. Not for graduate credit.

**502, 503 Tutorial in Philosophy (3 each)**

Discussion by the staff and advanced students of research problems in philosophy. Presentation and criticism of original papers. (Independent Study) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 9 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Physical Education and Exercise Science (PEX)**

*Co-Chairpersons:* Associate Professor Blanpied and Professor Manfredi

**105 Beginner Elective Activity I: Individual and Dual Sports (1)**

Beginning level of instruction for students with little or no previous experience in the activities offered. Select appropriate letter for activity desired; e.g., 105A Beginning Archery. (Studio 3)

A Archery	M Tennis
B Badminton	N Track and Field
C Biking and Hiking	P Marksmanship
D Bowling	S Activities for Children
E Canoeing	T Handball
F Fencing	W (or MSC) Aerobic
G Golf	Fitness and Muscular
H Gymnastics	Endurance
I Sailing	Y Modern Gymnastics
K Skiing	Z Paddleball
L Aerobics	

**106 Activity II: Team Sports and Group Activities (1)**

Beginning level of instruction for students with little or no previous experience in the activities offered. Select appropriate letter for activity desired. (Studio 3)

A Folk and Square Dance	L Soccer
H Basketball	M Softball
I Flag Football	N Volleyball
J Field Hockey	P Campcraft
K Lacrosse	

*The above activities may be offered in combination or as a single activity for the entire semester.*

**115 Team Sports (0.5)**

Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to physical education majors only.

A Basketball	E Lacrosse
B Field Hockey	F Soccer
C Flag Football	G Softball
D Recreational Sports	H Volleyball

**120 Weight Training and Physical Conditioning (1)**

Principles of weight training and conditioning with emphasis on constructing individual and group exercise programs. (Studio 3) Open to physical education majors only.

**123 Foundations of Health (3)**

Development of attitudes and practices that lead to more healthful living. Personal and community health problems studied. (Lec. 3) (S)

**130 Beginning Swimming (1)**

Beginning level of instruction for students with little or no previous experience. (Studio 3)

**172 Basic First Aid and CPR (0.5)**

Instruction and practice in basic level of injury prevention and first aid and CPR procedures. Students successfully meeting requirements will receive Basic First Aid and CPR certifications (Lec./Lab. 1)

**205 Intermediate Elective, Activity I (1)**

Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 105. (Studio 3)

**206 Intermediate Elective, Activity II (1)**

Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 106. (Studio 3)

**215 Individual Sports (0.5)**

Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to physical education majors only.

A Archery	E Golf
B Badminton	F Tennis
C Bowling	G Wrestling
D Fencing	H Track and Field

**217 Field Experience in Physical Education, Health, and Recreation (1)**

Students assist in one of the following: community agency, public or private school program, summer camp or recreation program, special education program. (Practicum) Pre: permission of chairperson. May be repeated but with different agency. S/U credit.

**222 Basic Movements and Gymnastics (1)**

Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills of apparatus and tumbling with special emphasis on teaching and safety procedures. (Studio 3) Open to physical education majors only.

**230 Intermediate Swimming (1)**

Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in swimming. (Studio 3)

**243 Prevention and Care of Athletic Injuries and First Aid (3)**

Conditioning, use of physiotherapy equipment, massaging, taping and bandaging technique. Latest American Red Cross procedures with the opportunity to receive standard certification. (Lec. 2, Lab. 2) Open to physical education majors only.

**251 Folk and Square Dance (1)**

Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills. (Studio 3) Open to physical education majors only.

**263 Principles of Athletic Coaching (3)**

Principles of exercise physiology, leadership, and psychology applied to athletic coaching. Includes materials on administration of athletics. (Lec. 3)

**270 Introduction to the History and Philosophy of Physical Education (3)**

Historical development of physical education as an integral part of education and as a profession from ancient times to the present. Emphasis on development of educational philosophies within physical education and basic to current interpretations of the theory and practice of physical education. (Lec. 3)

**272 Basic First Aid and CPR Instructor (1)**

Instruction and practice in performance and teaching the basic level of injury prevention and first aid and CPR procedures. Students successfully meeting requirements will receive First Aid and CPR Instructor certifications. (Lec./Lab. 2)

**275 Introduction to Exercise Science (3)**

Principles of exercise, components of health-related fitness, weight control, and stress management. Basic exercise prescription for cardiorespiratory endurance, muscular strength, and endurance and flexibility. (Lec. 3)

**280 Introduction to Recreation and Leisure Studies (3)**

Development of recreation from a historical and cross-cultural perspective. Emphasis on the role of leisure in a community setting through study of the relationships of play, recreation, and leisure. (Lec. 3)

**304 Methods of Teaching Physical Education in Elementary Schools (3)**

Instruction in contemporary techniques used in a program of physical education for elementary school children. Types of activities found in basic programs and in planned progressions for various age groups. (Lec. 2, Lab. 2) Pre: concurrent enrollment in 305, admission to the teacher education program by the start of semester; or permission of chairperson.

**305 Supervised Experience—Physical Education in the Elementary School (1)**

Students participate in supervised experience laboratory for methods learned in 304. (Practicum) Pre: concurrent enrollment in 304, admission to the teacher education program by the start of semester or permission of chairperson.

**310 Principles of Human Motor Development (3)**

Overview of the principles of motor development for the physical education teacher. Examines

human motor development across the life span with emphasis on assessment and program development. Includes basic principles of motor learning. (Lec. 3) Pre: admission to the teacher education program and PSY 232 or HDF 200; or permission of chairperson.

**314 Methods of Teaching Physical Education in Secondary Schools (3)**

Instruction in contemporary techniques used in a program of physical education for secondary school children. Types of activities found in basic programs and in planned progressions for various age groups. (Lec. 2, Lab. 2) Pre: 304, 305, concurrent enrollment in 315, admission to the teacher education program; or permission of chairperson.

**315 Supervised Experience—Physical Education in the Secondary School (1)**

Students participate in supervised experience laboratory for methods learned in 314. (Practicum) Pre: 304, 305, concurrent enrollment in 314, admission to the teacher education program; or permission of chairperson.

**322 Outdoor Leisure Pursuits (1)**

Principal philosophical foundations of adventure theory and wilderness leadership are examined while the student learns to teach outdoor leisure activities. Concepts of judgment, decision-making, leadership and environmentally sensitive practices are introduced. (Lec. 1) Pre: 130 or 230, physical education teaching majors only; or permission of chairperson.

**324 Rhythms and Dance (3)**

Instruction in the fundamental skills of folk, square, ballroom, and social dances, emphasizing personal skill acquisition and the skills necessary for teaching dances in the public/private school physical education environment. (Lec. 2, Lab. 2) Pre: admission to the teacher education program by the start of semester, or permission of chairperson.

**325 Physical Fitness Appraisal and Guidance (3)**

Theory and application of physical fitness assessments with focus on appropriate test selection and performance. Emphasis on practical skills of test administration. Preparation for ACSM-HFI certification. (Lec. 2, Lab. 2) Pre: 275.

**330 Life Saving (1)**

(Studio 3)

**334 (or BIO 334) Physiology of Exercise (3)**

Applied human physiology, with applications to work, health, physical education, and athletic sports. Particular attention to adjustments of the circulatory and respiratory systems during physical activity. Application of latest technology in the field of fitness and health. (Lec. 3) Pre: BIO 201 or 242.

**335 (or BIO 335) Physiology of Exercise Laboratory (1)**

Student participation in laboratory sessions designed to understand the physiology of exercise relating to body composition, EKG, pulmonary, and metabolic functions. (Lab. 3) Pre: 201 or 242 and concurrent enrollment in 334.

**340 Water Safety Instructor (2)**

(Lec. 1, Lab. 2)

**341 Techniques of Officiating I (3)**

Presentation of current methods and techniques of officiating selected fall team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2)

**342 Techniques of Officiating II (3)**

Presentation of current methods and techniques of officiating selected spring team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2)

**343 Advanced Athletic Training: Recognition of Athletic Injuries (3)**

Development of advanced diagnostic techniques for recognizing and evaluating athletic injuries. Development of advanced techniques for protection of athletic injuries. (Lec. 2, Lab. 2) Pre: 243.

**344, 345 Field Experience in Athletic Training I, II (3 each)**

Laboratory participation under training room conditions involving specific techniques in the prevention, protection, and emergency care of athletes participating in intercollegiate and intramural athletics. Supervised field practicum, 150 hours. (Practicum) Pre: 243 or permission of chairperson for 344; 343 and 344 or permission of chairperson for 345.

**346 Skin and Scuba Diving, Beginners (2)**

Emphasis on basic physical principles, hazards, selection of equipment, and techniques. (Note: This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for a reference to an approved physician prior to July 1 for enrollment in the fall semester and November 1 for enrollment in the spring semester. (Lec. 1, Lab. 2) Pre: permission of instructor.

**347 Skin and Scuba Diving, Advanced (2)**

Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. (Note: This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for a reference to an approved physician prior to July 1 for enrollment in the fall semester and November 1 for enrollment in the spring semester.) (Lec. 1, Lab. 2) Pre: 346.

**355 Coaching of Soccer (2)**

Techniques and acquisition of fundamental skills. Includes advanced tactics and strategy, analysis of individual and team play, officiating, and planning of training schedules. (Lec. 1, Lab. 2) Pre: 263 or permission of instructor.

**362 Coaching of Track and Field (2)**

Theory, techniques, and practice in coaching of track and field. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**364 Coaching of Baseball (2)**

Theory, techniques, and practice in coaching baseball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**369 Tests and Measurements (3)**

The place of testing in the physical education curriculum. Includes analysis of data, marking systems, and overview of existing tests and measures. (Lec. 3)

**370 Kinesiology (3)**

The study of human movement based on anatomical, physiological, and mechanical principles. Emphasis on application of these principles to fundamental movement and physical education activity. (Lec. 3) Pre: BIO 121 and 242.

**375 Women in Sport: Contemporary Perspectives (3)**

Survey of issues relating to gender, herstory, governance, physiology, psychology, economics, diversity, and the institutionalization of women involved in sport. (Lec. 3)

**380 Organization and Administration of Physical Education (3)**

Techniques, methods, and systems used in organizing and administering physical education programs in public and private institutions. (Lec. 3)

**382 Psycho-Social Aspects of Physical Education and Sport (3)**

The scientific study of the behavior of individuals and groups within sport and physical activity. (Lec. 3) Pre: admission to the teacher education program and PSY 113, or permission of chairperson.

**384 Coaching of Football (2)**

Theory, techniques, and practice in coaching football. (Lec. 2) Pre: 263 or permission of instructor.

**386 Coaching of Basketball (2)**

Theory, techniques, and practice in coaching basketball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**391 Directed Study (1-3)**

Development of an approved project supervised by a member of the department faculty. (Independent Study) Pre: junior standing and permission of chairperson and instructor.

**410 Adapted Physical Education (3)**

Planning and evaluation of physical education programs for individuals with special needs. Includes issues regarding disability laws and various mental, psychological, and physical conditions. (Lec. 2, Lab. 2) Pre: 370 or permission of chairperson.

**415 Classroom Management, Communication, and Discipline Skills for Teaching Physical Education (3)**

Psycho-social bases of elementary and secondary student behaviors related to the physical education environment. Recognition of cultural differences and diverse communication styles, and techniques to decrease management episodes and increase student motivation. (Lec. 3) Pre: PSY 113, and PSY 232; 304 and 314, and admission to the teacher education program; or permission of department chairperson. Not for graduate credit.

**416 Aging and Leisure (3)**

The aging process and its impact on leisure pursuits and recreation programming for older adults. Assessments of researching needs; program adaptation; fitness benefits; and retirement planning. (Lec. 3) Pre: junior or senior standing. In alternate years.

**420 Fitness Programs for Individuals with Chronic Diseases (3)**

Theory and application of physical fitness programs and testing of individuals with cardiovascular and metabolic diseases. (Lec. 3) Pre: 325, 334 and 335. Not for graduate credit.

**425 Fitness and Wellness Program Development (3)**

Development and administration of fitness and wellness programs. Includes program leadership and managerial skills for corporate, commercial, community, and clinical settings. (Lec. 3) Pre: 275, 325.

**430 Adapted Aquatics (3)**

Planning, administering, and teaching adapted aquatics. Application of kinesiological concepts, characteristics, and methods of teaching aquatics to people with disabilities. (Lec. 2, Lab. 2) Pre: 410, intermediate level swimming ability, or permission of instructor.

**443 Advanced Athletic Training: Rehabilitation of Athletic Injuries (3)**

Advanced learning in reconditioning of athletic injuries. Includes learning the use of mechanical, electrical, cryo-, hydro-, and drug therapy. Athletic training administration included. (Lec. 2, Lab. 3) Pre: 343 or permission of chairperson. Not for graduate credit in physical education.

**484 Supervised Field Work (6-12)**

Supervised field work in health, physical education, or recreation in community and/or commercial

agencies. (Practicum) Not for teacher certification or graduate credit.

**486 Field Experience Seminar (3)**

Seminar for students completing field work in health, physical education, or recreation. Topics include identification of problems, resource materials, and discussions of future career concerns. (Seminar) Pre: concurrent enrollment in 484. Not for graduate credit in physical education.

*Note: Student teaching includes practicum in both elementary and secondary schools under the supervision of the department. See EDC 485, 486, 487, 488, and 489.*

**510 Current Issues in Physical Education, Health, and Recreation (3)**

Designed to develop student awareness of contemporary situations that are of concern to the above professions. Extensive review of contemporary literature. Critical analysis of selected issues, their components and effects. (Lec. 3) Pre: permission of instructor.

**520 Curriculum Construction in Physical Education (3)**

Analysis of criteria and procedures for curriculum construction in physical education. Standards for the evaluation and revision of elementary and secondary school physical education courses. (Lec. 3) Pre: permission of instructor.

**525 Comparative Physical Education and Sport (3)**

Examination of the status and practice of sport and physical education in selected countries. Emphasis on comparative analyses in developed and third world countries. (Lec. 3) Pre: graduate standing or permission of instructor.

**526 Sport and International Relations (3)**

An examination of the role that sport plays in promoting international relations. Special lectures, readings, library research on topics relating to sport and international relations. (Lec. 3) Pre: graduate standing or permission of instructor.

**530 (or EXS 530) Research Methods and Design in Physical Education and Exercise Science (3)**

An introduction to the basic aspects of research, including problem selection, literature review, instrumentation, methodology, and the writing of research reports and articles. (Lec. 3) Pre: competence in basic statistics and permission of instructor.

**540 Planning and Supervision of Recreational and Athletic Facilities (3)**

Examination of the factors involved in the construction and/or renovation of facilities for most efficient multipurpose use and maintenance. Course includes field trips. (Lec. 3) Pre: junior standing and permission of chairperson.

**550 Administration of Physical Education (3)**

Problems and procedures for administering a physical education program studied from the viewpoint of the physical education administrator, the school administrator, and the faculty. Emphasis is placed on the study of administrative cases. (Lec. 3) Pre: 380 or permission of instructor.

**551 Sport and Recreation Operations (3)**

Analysis of operational problems and policies associated with interscholastic, intercollegiate, professional, community, and commercial sports enterprises. (Lec. 3) Pre: 380 or graduate standing.

**552 Supervision of Physical Education and Health Instruction (3)**

Principles, techniques, and procedures involved in effective supervision of physical education and health instruction, with emphasis on the leadership role of the supervisor in the improvement of instruction. Pre: graduate standing or permission of instructor. (Lec. 3)

**555 Women in Sport: Issues and Controversies (3)**

Critical analysis of women's sports using contemporary feminist perspectives. Emphasis on psychosocial and political-economic constructs that regulate women's emergence into sport. (Lec. 3)

**560 Seminar in Health, Physical Education, and Recreation (3)**

Selected topics within the three areas, depending on availability of specialized instruction including visiting professorship. (Seminar) Pre: permission of instructor.

**578 Sport in American Culture (3)**

Survey course focusing on the social impact of sport on society. Emphasis on critical analyses of sport phenomenon, sport and cultural ideology, and political and economic impact on society. (Lec. 3) Pre: graduate standing or permission of instructor.

**580 Physical Education: Mentally Retarded and Learning Disabled (3)**

Contributions of physical education to the growth and development of the mentally retarded and learning disabled. Theoretical and practical aspects of programs to best serve their individual needs. (Lec. 3) Pre: permission of instructor.

**582 (or EXS 582) Applied Sport Psychology (3)**

Focus on performance enhancement techniques (i.e., imagery, goal-setting, etc.) designed to improve individual and team performance. (Lec. 3) Pre: graduate standing, PSY 113 and 232 or permission of instructor.

**585 Adapted Physical Activities for Special Populations (3)**

Characteristics and needs for special populations: retarded, emotionally disturbed, learning disabled,

sensory impaired, and obese. Adapted activities based on individual needs. Effects of federal legislation on programs discussed. (Lec. 3) Pre: permission of instructor.

**591 (or EXS 591) Special Problems (3)**

Written paper reporting an in-depth investigation of a pertinent problem in the field, including a review of relevant literature, analysis, and solution of the problem based on scientific methodology, with recommendations for improved practices. (Independent Study) Limited to and required of all graduate students in physical education who elect the nonthesis option.

**592 (or EXS 592) Internship in Physical Education and Exercise Science (3)**

Directed field experience under the supervision of a faculty member and a professional member of the cooperating institution. Application of knowledge, synthesis of practical experiences. Paper required. (Practicum) Pre: a minimum of 12 graduate credits in physical education and permission of major professor and chairperson.

**595 (or EXS 595) Independent Study (3)**

Development of an approved project supervised by a member of the graduate faculty. (Independent Study) Pre: permission of chairperson and instructor. May not be substituted for 591 or 599.

**599 (or EXS 599) Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Physical Therapy (PHT)**

Director: Professor Rowinski

*Note: Following are upper-level undergraduate courses that are required for students admitted to the master's degree program in physical therapy. Physical therapy is not offered at the undergraduate level; students must have a bachelor's degree to gain admission to this program.*

**410 Human Anatomy (4)**

Structure and function of human anatomy as related to physical therapy. Emphasis on musculoskeletal, visceral, nervous and vascular systems and tissue histology. (Lec. 4) Pre: BIO 121, 242, admission to physical therapy program, or permission of instructor. Concurrent enrollment in 411 required.

**411 Applied Human Anatomy Laboratory (2)**

Dissection of a cadaver to demonstrate structure and function of human anatomy. Accurate palpation of anatomic structures in parallel with dissection. (Lab. 4) Pre: admission to physical therapy program or permission of instructor. Concurrent enrollment in 410 required.

**412 Basic Physical Evaluation, Therapeutic Exercise, and Care (3)**

Surface anatomy, range of motion, reflex, and manual muscle testing methods of the physical examination are presented. Soft tissue evaluation and introduction to therapeutic exercise prescription are provided to initiate the student's experience of therapeutic care provision. (Lec. 2, Lab. 3) Pre: admission to physical therapy program or permission of instructor.

**417 Psychosocial Needs of the Disabled (2)**

The physical therapist's role in addressing the psychosocial needs of the patient and family resulting from movement disorders. Reaction to illness and disability and the need to consider particular religious, cultural, social, and economic differences. (Lec. 2) Pre: admission to physical therapy program or permission of instructor.

**418 Professional and Community Practices in Physical Therapy (1)**

Introduction to relation of physical therapy practice to the community health care delivery systems. Organization of hospital departments, private practices, and other specific clinical settings is elucidated to initiate student's professional socialization. (Practicum) Pre: admission to physical therapy program or permission of instructor.

**420 Physiological Basis of Physical Therapy (3)**

A comprehensive study of the physiological mechanisms, adaptations, and measurement principles which guide therapeutic evaluation and treatment. Laboratory demonstrations and experiences introduce the student to quantification of physiological change in humans. (Lec. 2, Lab. 3) Pre: 410 or permission of instructor.

**422 Pathophysiology and Medical Management of Movement Disorders (3)**

Exploration of physiological regulation in disease states, with an emphasis on total medical management of disorders affecting human movement. Role of the therapist in interacting with various other medical and paramedical professionals is presented. (Lec. 3) Pre: BIO 242, admission to physical therapy program, or permission of instructor.

**430 Human Neurosciences and Neurology (4)**

Anatomy, physiology, dysfunction, and evaluation of the human nervous system as a basis of therapeutic intervention. Gross and microscopic structure of the nervous system and the neurological examination. (Lec. 3, Lab. 3) Pre: BIO 121, 242, admission to physical therapy program, or permission of instructor.

**440 Advanced Head and Neck Anatomy**

See Dental Hygiene 440.

**510 Biomechanics and Pathokinesiology (3)**

Principles, theories, and recent investigations of the biomechanics of human motion and posture are

presented to develop analytical skills for normal and abnormal movement evaluation. (Lec. 2, Lab. 3) Pre: 410, 412, 420, or permission of instructor.

### **513 Directed Study in Physical Therapy (1-3)**

Subject matter arranged to meet the individual needs of graduate students in physical therapy under the supervision of. (Independent Study) Pre: permission of instructor.

### **515 Research Methods in Physical Therapy (3)**

Research design and methods in current physical therapy theory development and scientific literature. Preparation of a research proposal through review of literature and pilot study of selected research methods are required. (Lec. 3) Pre: credit or concurrent enrollment in STA 307 or equivalent and second-year standing in physical therapy or permission of instructor.

### **518 Ethical, Legal, and Interdisciplinary Issues of Clinical Practice (2)**

Standards, ethical considerations, and legal implications of physical therapy practice. Communication with other health care disciplines and governmental agencies for the provision, progression, and implementation of physical therapy services. (Lec. 2) Pre: second-year standing in physical therapy or permission of instructor.

### **525 Research Projects in Physical Therapy I (3)**

Development of an investigation into some problem of basic or applied physical therapy science. Case studies, preliminary data, or survey instruments are compiled, and a review of related literature is accomplished under guidance of faculty. (Independent Study) Pre: 515, third-year standing in physical therapy, or permission of instructor.

### **528 Professional Practice and Administration (3)**

Responsibilities of the physical therapist in supervising personnel and establishing therapeutic practice in hospital, out-patient, and private settings. Department planning, personnel development, cost accounting and billing, standards of practice, and quality assurance are discussed. (Lec. 3) Pre: second-year standing in physical therapy or permission of instructor.

### **532 Physical Agents and Instrumentation in Physical Therapy (4)**

Theory, clinical investigations, and current research regarding the application of physical therapeutic energies and agents. Direct treatment techniques and supervision of support personnel in the administration of mechano-, electro-, thermo-, hydro-, ionto-, and phototherapy. (Lec. 3, Lab. 3) Pre: 420, second-semester standing in physical therapy, or permission of instructor.

### **535 Research Project in Physical Therapy II (3)**

Completion of investigation into some problem of basic or applied physical therapy science. Data

gathering is completed, results are summarized, and conclusions relating findings to previous studies are formulated. (Independent Study) Pre: 525 or permission of instructor.

### **538 Professional Problems and Public Relations (2)**

Current problems in professional practice including legislative, educational, and interdisciplinary topics. Issues relating to consumers of physical therapy services and methods of marketing the services of physical therapists are elaborated. (Lec. 2) Pre: third-year standing in physical therapy or permission of instructor.

### **540 Human Motor Development and Learning (3)**

Development and maturation of the human nervous system forms the basis for clinical considerations of developmental disabilities and motor learning. Theories of motor skill acquisition and therapeutic interventions for neuromuscular problems of the infant, child, adolescent, and adult. (Lec. 2, Lab. 3) Pre: 410, 430, second-year standing in physical therapy, or permission of instructor.

### **542 Clinical Diagnosis (2)**

Modern medical and therapeutic diagnostic methods are presented to develop competencies in referral and evaluation of disorders. Medical and pharmacological science topics pertaining to physical therapy diagnoses are presented by invited lecturers. (Lec. 2) Pre: second-year standing in physical therapy or permission of instructor.

### **550 Orthopaedic Physical Therapy (3)**

Physical evaluation and treatment techniques of the human muscular, articular, and skeletal systems related to orthopaedic conditions. Rehabilitation of injured, congenitally dysfunctioning, surgically intervened patients, and patients with conditions at risk for dysfunction. (Lec. 2, Lab. 3) Pre: 410, 412, 420, 510; second-year standing in physical therapy or permission of instructor.

### **552 Functional Rehabilitation and Advanced Therapeutic Exercise (3)**

Patient care techniques and programs related to the restoration of functional motor activities are provided through specification of treatment protocols, assistive devices, therapeutic apparatus, and therapeutic exercise programs. Competency is developed by simulating actual clinical conditions. (Lec. 2, Lab. 3) Pre: 550 or permission of instructor.

### **560 Neurological Physical Therapy (3)**

Physical therapy for the neurologically disabled patient. Proprioceptive neuromuscular facilitation, neurodevelopmental, sensory-motor integration, other patterned stimulation and evaluation techniques with emphasis on stroke, spinal cord injury, and other disabling conditions of the nervous sys-

tem. (Lec. 2, Lab. 3) Pre: 430, BIO 242, second-year standing in physical therapy, or permission of instructor.

### **570 Cardiopulmonary Physical Therapy (3)**

Physiological basis, testing and evaluation, treatment, and administration of programs for cardiac and pulmonary-diseased patients requiring physical therapy. (Lec. 2, Lab. 3) Pre: 420, 422, second-year standing in physical therapy, or permission of instructor.

### **574 Sports Physical Therapy (2)**

Advanced knowledge and competency in sports injury evaluation and treatment are developed. Additional coverage of sports injury prevention, athletic screening, medical intervention, interdisciplinary coordination, and patient or public education is provided. (Lec. 1, Lab. 3) Pre: 550 or permission of instructor.

### **575 Physical Therapy Internship I (5)**

Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule is determined by the academic clinical coordinator and clinical. (Practicum) Pre: permission of instructor.

### **580 Pediatric and Geriatric Physical Therapy (3)**

Specific problems of the maturing and aging patient population in physical therapy practice. Developmental disability programs and treatment programs in nursing facilities, treatment centers, and home programs for the aged patient population. (Lec. 2, Lab. 3) Pre: 430, 540, third-year standing in physical therapy.

### **585 Physical Therapy Internship II (5)**

Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule is determined by the academic clinical coordinator and clinical. (Practicum) Pre: permission of instructor.

### **590 General Practice Physical Therapy (3)**

Problems and benefits associated with the business and conduct of different types of physical therapy private practice. Integration of the art and science of physical therapy with the delivery of services. (Lec. 3) Pre: 418, 528, third-year standing in physical therapy.

### **595 Physical Therapy Internship III (5)**

Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Selection of clinical specialty area of student's interest is considered in determination of the setting. (Practicum) Pre: permission of instructor.



## Physics (PHY)

*Chairperson:* Professor Müller

### 101 Physics and Physicists (1)

Survey course spotlighting current developments in physics and examining the way scientific research is carried out. (Lec. 1)

### 109 Introduction to Physics (3)

Appreciation of the physical environment and an introduction to the principles and theories of contemporary physics. Recommended for elementary education majors. (Lec. 3) Pre: concurrent enrollment in 110. Not open to students with credit in 111, 112, 203, 204, 205, 213, or 214. (N)

### 110 Laboratory for Introduction to Physics (1)

Demonstrations and laboratory exercises related to 109. (Lab. 2) Pre: concurrent enrollment in 109. (N)

### 111, 112 General Physics I, II (3 each)

111: Mechanics, heat, and sound. 112: Optics, electricity, magnetism, and modern physics. Noncalculus presentation of fundamental physics. (Lec. 3) Pre: concurrent enrollment in 185 and 186. (N)

### 140 The Ideas of Physics (3)

A nonmathematical presentation of classical and modern physics illustrated by lecture demonstrations. (Lec. 3) Of particular interest to liberal arts students. (N)

### 185, 186 Laboratory for General Physics I, II (1 each)

Selected laboratory exercises applicable to materials in 111, 112. (Lab. 2) Pre: concurrent enrollment in 111 and 112. (N)

### 203 Elementary Physics I (3)

Introduction to Newtonian mechanics. Kinematics and dynamics of particles and systems of particles. Motion of rigid bodies and oscillatory motion. Conservation principles. (Lec. 3) Pre: credit or concurrent enrollment in MTH 141 and concurrent enrollment in 273. Intended for science or engineering majors. Not open to students with credit in 213. (N)

### 204 Elementary Physics II (3)

Introduction to electricity and magnetism, leading to Maxwell's equations. Electric fields and Gauss' law; magnetic fields and Ampere's law. Capacitance and inductance, DC and AC circuits. Electromagnetic waves. (Lec. 3) Pre: 203, credit or concurrent enrollment in MTH 142, and concurrent enrollment in 274. Intended for science or engineering majors. Not open to students with credit in 214. (N)

### 205 Elementary Physics III (3)

Introduction to topics of thermodynamics, kinetic theory, wave motion, acoustics, and optics. (Lec. 3) Pre: 203, credit or concurrent enrollment in MTH 243, and concurrent enrollment in 275. Intended for science or engineering majors. Not open to students with credit in 213, 214. (N)

### 213, 214 Elementary Physics I, II (3 each)

213: Mechanics and elements of thermodynamics. (Lec. 3) Pre: MTH 141 and 142. 142 may be taken concurrently. For students planning to major in one of the sciences. 214: Electricity, magnetism, and elements of wave phenomena. (Lec. 3) Pre: concurrent enrollment in 285 and 286, MTH 142, and credit or concurrent enrollment in MTH 243. Intended for science or engineering majors. (N)

### 273, 274, 275 Elementary Physics Laboratory I, II, III (1 each)

Laboratory exercises and recitation sessions related to topics in 203, 204, and 205. (Lab. 3) Pre: concurrent enrollment in 203, 204, and 205. (N)

### 285, 286 Physics Laboratory I, II (1 each)

Laboratory exercises and recitation sessions related to topics in 213 and 214. (Lab. 3) Pre: concurrent enrollment in 213 and 214. (N)

### 306 Elementary Modern Physics (3)

Introduction to relativistic and quantum physics: special relativity theory, structure of atoms, molecules, nuclei, and solids including semiconductor devices; wave and particle properties (Lec. 3) Pre: 204, 205, or ELE 210. Not open to students with credit in 341.

### 322 Mechanics (3)

Introduction to Newtonian statics and dynamics using vector analysis; particle motion, Lagrange's equations; rigid body motion. Application to various topics in physical mechanics. (Lec. 3) Pre: 204 and MTH 244.

### 331 Electricity and Magnetism (3)

Electrostatic fields and dielectric materials; magnetic fields, magnetic induction and magnetic materials; introduction to Maxwell's equations. (Lec. 3) Pre: 204 and MTH 243.

### 334 (or AST 334) Optics (3)

Geometrical and physical optics; thick lens optics, interference, diffraction, polarization. (Lec. 3) Pre: 112, 214, or 205.

### 341 Introductory Modern Physics (3)

The development and current status of major advances in 20th-century physics, such as special relativity, kinetic theory, structure of atoms, molecules and nuclei, wave and particle properties of matter, thermionic and photoelectric effects. (Lec. 3) Pre: 213, 214, and MTH 142. MTH 243 and ELE 210 can be substituted for 214. Not open to students with credit in 306.

### 381, 382 Advanced Laboratory Physics (3 each)

Key experiments covering a wide range of disciplines including nuclear physics, properties of the electron, magnetism thermodynamics, and optics. Quantitative analysis is stressed, including statistics and curve fitting. Technical skills are developed. (Lab. 6) Pre: 204 and 205.

### 401, 402 Seminar in Physics (1 each)

Preparation and presentation of papers on selected topics in physics. (Seminar) Required of all undergraduate and graduate students in physics; one semester required for all senior physics majors.

### 410 Computational Physics (3)

Development and application of computer techniques to classical and quantum physics problems. Emphasis will be on approximation techniques and numerical methods for solving matrix, integral, and differential equations arising in physics. (Lec. 2, Lab. 3) Pre: MTH 215, CSC 211, credit or concurrent enrollment in MTH 244 and 306.

### 420 Introduction to Thermodynamics and Statistical Mechanics (3)

Emphasis on laws of thermodynamics and properties of thermodynamic systems, kinetic theory of gases, molecular velocity distributions, transport phenomena, Maxwell-Boltzmann statistics. (Lec. 3) Pre: 205 and MTH 243.

### 425 Acoustics (3)

Mathematical theory of vibrating systems; harmonic wave motion. Topics include: transmission and absorption of sound waves, microphones, psychoacoustics, underwater acoustics, and ultrasonics. (Lec. 3) Pre: permission of chairperson.

### 451 Introduction to Quantum Mechanics (3)

Particle-wave duality, uncertainty principle; Schrödinger equation: eigenvalues, wavefunctions, time dependence; Dirac notation; Heisenberg representation: operators, matrices, eigenvectors; angular momentum: spin and polarization, Pauli matrices, hydrogen atom, application to quantum computation; symmetries: conservation laws, fermions and bosons. (Lec. 3) Pre: 306, 322, MTH 215 and 244.

### 452 Quantum Mechanics: Techniques and Applications (3)

Approximation techniques including time-dependent and time-independent perturbation theory, WKB, variational method, Born, Hartree, and computational techniques. Applications to atomic and molecular structure, model potentials, radiative transitions, and scattering. (Lec. 3) Pre: 451 and MTH 461.

### 455 Introduction to Solid-State Physics (3)

Crystal structure, thermal, electrical, and magnetic properties of solids. Electron gas theory of metals, band theory of solids. Semiconductors. (Lec. 3) Pre: 451 and MTH 243.

**483, 484 (or AST 483, 484 or OCG 483, 484) Laboratory and Research Problems in Physics (3 each)**

Research in current areas of physics. Students perform research projects with individual faculty members. Students in physics and physical oceanography may coordinate their research project with a faculty member of the Graduate School of Oceanography. (Lec. 1, Lab. 6) Pre: 381 and 382.

**491, 492 (or AST 491, 492) Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study)

**510 Mathematical Methods of Physics I (3)**

Topics designed to include applications in physics. Vector and tensor analysis; linear algebra; coordinate systems. Determinants, matrices; introductory group theory. Infinite series, complex analysis, analytic properties, conformal mapping, calculus of residues. Fourier analysis and Laplace transforms. (Lec. 3) Pre: permission of chairperson.

**520 Classical Dynamics (3)**

Newton's laws. Conservation theorems and symmetry properties. Lagrangian mechanics. Central force motion. Dynamics of rigid bodies. Hamiltonian mechanics. Canonical transformations. Action-angle coordinates. Hamilton-Jacobi theory. Deterministic chaos. Relativistic mechanics. (Lec. 3) Pre: credit or concurrent enrollment in 510.

**525 Statistical Physics I (3)**

Equilibrium thermodynamics. Thermodynamics of phase transitions. Elements of kinetic theory. Statistical ensembles and partition functions. Classical and quantum equilibrium statistical mechanics. (Lec. 3) Pre: 420 or equivalent, 510.

**530 Electromagnetism I (3)**

Electrostatics, including boundary value problem. Multipoles, electrostatics of macroscopic media, dielectrics. Magnetostatics. Time-varying fields, Maxwell equations, conservation laws. Plane electromagnetic waves, wave propagation. Wave guides, resonant cavities. Magnetic materials. (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520.

**560 Experimental Methods in Condensed Matter Science (3)**

Fundamental experiments on topics related to departmental research. Experimental methodology. (Lec. 2, Lab. 3) Pre: 484 or equivalent.

**570 Quantum Mechanics I (3)**

Dirac notation. Matrix representations, observables, uncertainty relations. Time evolution; Schroedinger and Heisenberg pictures. Schroedinger equation applications. Propagators and Feynman

path integrals. Aharonov-Bohm effect. Angular momentum; Wigner-Eckart theorem. (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520.

**577, 578 Seminar in Sensors and Surface Technology (1)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

**580 Condensed Matter Physics I (3)**

Drude and Sommerfeld theories. Crystal lattices and symmetries. Bragg scattering. Properties and calculation of electron spectra. Fermi surfaces of metals. Electrons in magnetic field. De Haas-van Alphen effect and Phonons. Electron-phonon interaction. Defects in solids. (Lec. 3) Pre: 525, 570 or permission of chair.

**590 Faculty Project (1–6)**

A special project directly related to the research program of an individual faculty member. (Independent Study). Pre: permission of chairperson. Not to exceed 6 credits.

**591 Special Problems (1–6)**

Advanced study under the supervision of a faculty member arranged to suit the individual needs of the student. (Independent Study) Pre: permission of chairperson. Not to exceed 6 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**610 Mathematical Methods of Physics II (3)**

Topics designed to include applications in physics. Ordinary and partial differential equations; Sturm-Liouville theory. Numerical methods and computational techniques. Probability and statistics. Integral transforms. Integral equations; Green's functions. Special functions of mathematical physics. (Lec. 3) Pre: 510.

**625 Statistical Physics II (3)**

Equilibrium critical phenomena (critical exponents, scaling relations, multicritical phenomena). Exact solutions. Renormalization group theory and other approximate methods. Critical behavior of magnets, fluids, and surfaces. (Lec. 3) Pre: 525 and 670.

**626 Statistical Physics III (3)**

Stochastic processes. Markov condition. Master equation. Fokker-Planck equation. Brownian motion. Langevin equation. Transport phenomena. Onsager theory of irreversible processes near equilibrium. Boltzmann equation. Linear response theory, fluctuation dissipation theorem. (Lec. 3) Pre: 525.

**630 Electromagnetism II (3)**

Radiating systems, scattering, and diffraction. Special theory of relativity. Dynamics of relativistic particles and electromagnetic fields. Collisions between charged particles, energy loss and scattering. Radiation by moving charges. Multipole fields. (Lec. 3) Pre: 530.

**660 Nuclear and Particle Physics (3)**

Weak, strong, and electromagnetic interactions. Nucleon-nucleon potential, shell model, optical model. Isospin, unitary symmetry, quark model of hadrons. Scattering and reaction theory of few-body systems. Deuteron. Relativistic nuclear and particle phenomena. (Lec. 3) Pre: 570 and 670.

**670 Quantum Mechanics II (3)**

Symmetry (parity, translation, time-reversal). Time-independent (dependent) perturbation theory, variational methods. Identical particles. Scattering theory (Lippman-Schwinger equation, Born series, partial waves, resonances, optical theorem, inelastic scattering). Applications. Relativistic quantum mechanics. (Lec. 3) Pre: 570 or permission of chairperson.

**672 Quantum Mechanics III (3)**

Atomic systems (structure, semiclassical radiation theory, collisions). Quantum fields (scalar, spin-1/2, electromagnetic). Applications: quantum field theory (Feynman diagrams in QED and weak interactions, renormalization). Fock space. Many-body theory. (Lec. 3) Pre: 670. In alternate years. Next offered spring 2003.

**680 Condensed Matter Physics II (3)**

Interacting systems. Green's functions. Diagrammatic methods. Applications to superconductivity. Fluctuations. Functional integration Generalized susceptibility and dielectric response. Fluctuation-dissipation theorem. Structure function. (Lec. 3) Pre: 530, 580 or permission of chair.

**690 Topics in Physics (3)**

Advanced topics in areas of research specializations: a) neutron physics; b) quantum fluids; c) magnetism; d) surface physics; e) nonlinear phenomena; f) advanced quantum physics; g) nuclear physics; h) low-temperature physics. (Lec. 3) Pre: permission of chairperson.

**691 Advanced Special Topics (1–6)**

Special topics related to current developments by visiting or permanent faculty. (Lec. 1–6) Pre: permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Physics Topics for Teachers (0–3 each)**

Especially designed for teachers of physical sciences. Basic topics in physics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

**Plant Sciences (PLS)**

*Chairperson:* Professor Casagrande

**101 Freshman Inquiry into Plant Sciences (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Plant Sciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**107 (or BIO 107) Plant Biology Seminar (1)**

A seminar series offered by faculty, graduate students, and visiting professionals for the purpose of acquainting students with career opportunities provided by the plant biology program. (Seminar)

**150 Plant Biology for Gardeners (3)**

Fundamentals of plant biology, emphasizing the structure, physiology, and ecology of vascular plants common to gardens and landscaped environments. (Lec. 3) (N)

**200 Introduction to Plant Protection (4)**

Basic study of weeds, insects, and disease agents, and the problems they cause. Recognition of important plant pests and application of integrated cultural, chemical, and biological pest management procedures. (Lec. 4) Pre: BIO 104A or 112 or 102, or permission of instructor.

**205 Population, Environment, and Plant Biology I (4)**

Solving problems related to the interaction of population growth, environment, cell behavior, and plant productivity, as seen from the perspective of competitive evolution. (Lec. 3, Lab. 2)

**210 Plant Protection Practicum (1)**

Introduction to practical aspects of plant protection, concentrating on field diagnostic techniques and development of analytical and observation skills. Diagnostics are primarily an interactive field activity, supplemented by microscopy, report writing, and oral presentations. (Practicum) Pre: prior or concurrent enrollment in 200 or permission of instructor.

**222 Ecology of the Home Landscape (3)**

Basics of home gardening with minimal environmental impact including maintenance of the trees, shrubs, lawns, flowers, vegetables, native and invasive plants, composting, water quality, and wildlife and pest management. (Lec. 2, Lab. 2)

**233 Floral Art (3)**

Theory and practice in the art of flower and plant arrangement for the home, show, and special occasions. History, elements, and principles of design and color. (Lec. 1, Lab. 4) (A)

**250 Plant Breeding and Genetics (4)**

Introduction to the general principles of plant breeding, with emphasis on the application of genetic principles in plant improvement strategies. (Lec. 3, Lab. 2) Pre: BIO 112 or 102.

**255 Horticultural Plant Physiology (3)**

Fundamental concepts underlying life functions in plants and their horticultural implications and relevancy. Emphasis on energy relations and material transport. Special consideration of photosynthesis, water use, nitrogen utilization, dormancy, and photomorphogenesis. (Lec. 3) Pre: BIO 112 or 102, CHM 101; PLS 205 recommended.

**301 Nursery Crop Production and Management (3)**

Foundation of nursery management and woody plant production practices. History and organization of the nursery industry, land selection and management, plant culture, growing structures and equipment, and recent innovations. (Lec. 2, Lab. 2) Pre: BIO 112 or 102 and PLS 205 or permission of instructor. In alternate years. Next offered spring 2003.

**305 Population, Environment, and Plant Biology II (4)**

Solving problems related to the interaction of population growth, environment, cell behavior, and plant productivity, from the perspective of competitive evolution. (Lec. 3, Lab. 2) Pre: 205 or permission of instructor. Next offered fall 2003.

**306 Landscape Management and Arboriculture (3)**

Culture of new and established trees, shrubs, and vines in the landscape. Practical exposure to planting, pruning, fertilization, and plant protection. Prepares the student for Arborist's Certification Examination. (Lec. 2, Lab. 2) Pre: BIO 112 or 102 or permission of instructor.

**311 Fruit Culture (3)**

Principles of fruit production with emphasis on home gardens. Topics include propagation, planting, soils, fertilization, cultural practices, pruning and storage of tree and small fruits and dwarfs or semi-dwarf stocks. (Lec. 2, Lab. 2) Pre: 205. In alternate years.

**315 Introduction to Horticulture Therapy (3)**

Objectives and techniques of applying horticulture and horticulture-related skills to therapeutic and rehabilitative programs. (Lec. 3) Pre: 205 or permission of instructor.

**320 Landscape Design (3)**

Examination of landscape design principles and practices including introduction to landscape graphics, preliminary design, and planting design. (Lec. 3) Pre: LAR 201 or permission of instructor. Not open to landscape architecture majors.

**322 Power Units (3)**

Principles of operation, maintenance, and adjustment of power units including gasoline and diesel engines and electric motors. Emphasis on tractors and other power units important in farm, nursery, greenhouse, and grounds maintenance operations. (Lec. 2, Lab. 2) In alternate years.

**324 Vegetable Science (3)**

The origins, culture, cultivars, soil, and fertility management of vegetables for commercial growers and home gardeners. Practical experience in growing vegetables from seed to harvest under greenhouse conditions. (Lec. 2, Lab. 2) Pre: 205. In alternate years.

**331 Floriculture and Greenhouse Management (3)**

The greenhouse environment and its relation to the culture of specific plants. Principles governing the production and culture of plants under controlled temperature, humidity, light, and modified atmospheres. Greenhouse construction and environmental control. (Lec. 3) Pre: 205 or permission of instructor.

**332 Plant Pathology: Introduction to Plant Diseases**

See Biological Sciences 332.

**335 Commercial Floral Design and Flower Shop Practices (3)**

Advanced floral design including wedding, funeral, church, and holiday arrangements. Flower shop practices, buying, selling, and handling cut flowers and potted plants. (Lec. 1, Lab. 4) Pre: 233 or permission of instructor.

**341 Introduction to Turf Management (3)**

Fundamental aspects of turfgrass science including identification, propagation, fertilization, pest control, and other soil-plant relationships. (Lec. 2, Lab. 2) Pre: 205 and NRS 212.

**350 Interior Landscaping (3)**

Identification, growth characteristics, culture, use, maintenance, and management of plants suitable for interior landscape situations. (Lec. 2, Lab. 2) Pre: 205 or permission of instructor.

**352 (or ASP 352) General Genetics (3)**

Introduction to basic genetic principles and concepts leading to an understanding of genes, heredity and the expression of inherited variation. Applications and implications of these concepts to animals, plants, fungi, and bacteria are discussed. (Lec. 3) Pre: BIO 104A or 104B, or 112 or 113 or 101 or 102. Not open to students with credit in BIO 352.

**353 Landscape Plants I**

See Landscape Architecture 353.

**354 Landscape Plants II**

See Landscape Architecture 354.

**355 (or ASP 355) Genetics Laboratory (2)**

Basic principles and concepts of genetics demonstrated with microorganisms, plants, and animals. (Lab. 4) Pre: credit or concurrent enrollment in 352 or BIO 352. Not open to students with credit in BIO 454.

**361 Weed Science (3)**

Ecological and cultural aspects of weed problems, physiology of herbicide action, selected problem areas in weed control and plant identification. (Lec. 2, Lab. 2) Pre: NRS 212, organic chemistry recommended. In alternate years. Next offered fall 2003.

**390 Irrigation Technology (3)**

A study of the science and technology of obtaining, applying, and managing water as it relates to the culture of field, forage, vegetable, turf, and ornamental crops. (Lec. 2, Lab. 2) Service learning. Pre: NRS 212 and MTH 111. In alternate years.

**393, 394 Plant Protection Clinic (3 each)**

Practical experience in plant pest detection and identification, pest management techniques and equipment. (Lec. 1, Lab. 4) Pre: ENT 385, PLS 332 or 440, and permission of instructor.

**399 Plant Sciences Internship (1-6)**

Directed work experience programs at nurseries, turf farms, greenhouses, plant breeding farms, arboreta, research farms, or laboratories. (Practicum) Pre: 205 and permission of instructor. May be repeated for a maximum of 6 credits. S/U credit.

**401, 402 Plant Sciences Seminar (1 each)**

Presentations and discussions of current topics of concern to producers and consumers of plants and plant products, including plant protection. (Seminar)

**405 Propagation of Plant Materials (3)**

Theoretical and practical study of propagation including grafting, budding, cuttage, and seedage. (Lec. 2, Lab. 2) Pre: 205.

**406 Senior Thesis Research (3-6)**

Seniors conduct research approved by a faculty mentor. Research results are written and orally presented to a group of faculty for a grade. (Independent Study) Pre: permission of instructor. May be repeated for up to 6 credits. Not for graduate credit.

**407 (or NRS 408) Environmental Education: Theory and Experiential Learning (3)**

Exploration of environmental education from a theoretical and experiential perspective. Seven weeks of lecture/discussion and seven weeks of training and teaching in an on-campus environ-

mental education program. (Lec. and Practicum) Service learning. Pre: NRS 100, 212, and PLS 200 or permission of instructor. Not available for graduate credit to NRS majors.

**415 Theories and Practices in Therapeutic Horticulture (3)**

Concepts and methods of using plant and gardening activities in horticulture therapy programs for exceptional individuals in most types of therapeutic situations. (Lec. 1, Lab. 4) Pre: 315 and 316. Not for graduate credit in plant science.

**436 Floriculture and Greenhouse Crop Production (4)**

Status of floriculture industry and commercial production of greenhouse crops including scheduling, marketing, and postharvest handling. Student project required. (Lec. 3, Lab. 2) Pre: 331.

**440 Diseases of Turfgrass, Trees and Ornamental Shrubs (3)**

Disease diagnosis, epidemiology, and control measures pertinent to these categories of plants. (Lec. 3) Pre: 332 or equivalent or permission of instructor.

**441 Plant Disease Laboratory (1)**

Laboratory and field diagnosis of turf diseases and diseases of trees and ornamental shrubs. (Lab. 2) Pre: concurrent enrollment in 440.

**442 Advanced Turf Management (3)**

Establishment and maintenance practices for specialty turfgrass areas (golf courses, lawn tennis courts, bowling greens, athletic fields, public parks, industrial and institutional grounds, airports, roadsides). Design and construction specifications, and construction and maintenance budgets. (Lec. 3) Pre: 341 or equivalent.

**452 Advanced Topics in Genetics**

See Biochemistry 452.

**463 Principles of Plant Disease Control (3)**

The extent and impact of plant disease loss. Disease-causing agents, the nature of disease epidemics, disease forecasting, and strategies for plant disease control. (Lec. 3) Pre: 332 or permission of instructor. In alternate years.

**471 Plant Improvement I (3)**

Plant cell and tissue culture methodologies particularly as they relate to the development and selection of improved plant varieties through the modern approaches of plant biotechnology. (Lec. 3) Pre: 205 and 352 or BIO 352. In alternate years.

**472 Plant Improvement II (3)**

Traditional breeding and contemporary approaches to the improvement of economic crops with a focus on emerging strategies and opportunities utilizing the tools of molecular biology for gene transfer. (Lec. 3) Pre: 205 and 352 or BIO 352. In alternate years.

**475 (or NRS 475) Plant Nutrition and Soil Fertility (4)**

The plant-soil system. Availability and mobility of mineral nutrients in soil and their uptake, distribution, and function in plants. Plant energy relations and organic nutrition. Laboratory: hydroponic plant culture, ion interactions, radioisotopes, and deficiency symptoms. (Lec. 3, Lab. 2) Pre: 205, NRS 212, BIO 112 or 102, and organic chemistry.

**476 Environmental Plant Physiology (3)**

Physiological interactions of plants with their physical and biological environment, emphasizing energy dynamics, signal transduction reactions, physiological responses to stress, and allelopathic associations. (Lec. 3) Pre: 205, BIO 262, or permission of instructor. In alternate years. Not for graduate credit.

**484 Structures (3)**

Principles of design and construction of structures related to agricultural production. Emphasis on woodframe buildings. Planning, materials, construction components, environmental control, and waste disposal. (Lec. 3) Pre: MTH 111 or equivalent, or permission of instructor. In alternate years.

**491, 492 Special Projects and Independent Study (1-3 each)**

Special work to meet individual needs of students in various fields of plant nutrition, propagation, growth and development, garden design, site planning, plant pathology, entomology, and related subjects. (Independent Study) Pre: permission of instructor by override only.

**501, 502 Graduate Seminar in Plant Sciences (1 each)**

Presentation of technical reports and discussion of current research papers in crop science, landscape ecology, growth and development of economic plants, and production, protection, and management of economic crops. (Seminar)

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**511 The Nature of Plant Disease (3)**

Analysis of the nature of plant disease, the processes of infection and pathogenesis, and the structural and physiological responses that determine resistance to disease. (Lec. 3) Pre: BIO 332 or equivalent. In alternate years.

**512 Plant Growth and Development (4)**

Environmental, chemical, and genetic regulation of plant development, from seed formation to senescence. (Lec. 3, Lab. 3) Pre: BIO 447. In alternate years.

**513 Laboratory Plant Tissue Culture (1)**

Techniques for initiation and continuous culture of plant cells; protoplast isolation, fusion, and selection; micropropagation, somatic embryogenesis,

and production of haploid plants via pollen and anther culture. (Lab. 3) Pre: BIO 447, concurrent enrollment in 472, and permission of instructor. In alternate years.

### 572 (or BCH 572) Plant Biochemistry (3)

Physiological chemistry unique to plants. Emphasis on energy acquiring, transferring, and storing reactions including the metabolism of carbohydrates, amino acids, lipids, phenolics, and phytohormones. (Lec. 3) Pre: BCH 311 or 581 or permission of instructor. In alternate years.

### 576 Environmental Plant Physiology (3)

Physiological interactions of plants with their physical and biological environment, emphasizing energy dynamics, signal transduction reactions, physiological responses to stress, and allelopathic associations. Supervised report on appropriate topic required. (Lec. 3) Pre: 205, BIO 262 or permission of instructor. In alternate years.

### 591, 592 Nonthesis Research in Plant Sciences (1-3 each)

Advanced work under the supervision of research to expand research experience into areas other than those related to thesis research. Arranged to suit individual requirements. (Independent Study) Pre: permission of instructor.

*Note: For other related courses, see BIO 311, 321, 323, 432, 437, 447, 453, 515, 521, 522, 524, 534, 536, 554, 571, 572 and MIC 521, 552.*

## Political Science (PSC)

*Chairperson:* Professor Moakley

### 113 American Politics (3)

Basic principles of the government of the United States: constitutionalism, separation of powers, federalism, civil liberties; politics; legislative, executive, and judicial organization; functions of government. (Lec. 2, Rec. 1) (S)

### 116 International Politics (3)

Nature of the state system, foundations of national power, means of exercising power in the interaction of states. Current international problems. (Lec. 2, Rec. 1) (S)

### 201 Introduction to Comparative Politics (3)

An examination of different governmental systems and political institutions. Illustrations and comparisons from the Americas, Europe, and the developing nations. (Lec. 3) Pre: 116. (S)

### 221 State and Local Government (3)

Survey of institutional framework of American state and local governments. Consideration of current events and controversies at state and local levels. (Lec. 3) Pre: 113. (S)

### 240 Major Political Ideologies (3)

Introduction to and analysis of fascism, communism, socialism, and capitalism. An examination of the contemporary meaning of liberalism, radicalism, and conservatism. (Lec. 3) (L)

### 261 The President and Public Policy (3)

Examines the role of the president within the American political process. (Lec. 3) Pre: 113 and freshman or sophomore standing. Students may not take both 261 and 461 for credit.

### 274 (or SOC 274) Criminal Justice System (3)

The American system of criminal justice, general processing of cases, principal actors, study of theories of criminal law, and pretrial detention and sentencing. (Lec. 3) Pre: 113.

### 288 The American Legal System (3)

Political and social analysis of the American legal system, particularly at trial court and street levels, and roles of participants in that system with observation of local courts. (Lec. 3) Pre: 113. (S)

### 300 Challenge of Nuclear Arms (3)

Nuclear weapons addressed from a range of perspectives. Emphasis on the strategic, political, social, and moral issues and controversies raised by the potential for nuclear war. (Lec. 3) Pre: 3 credits in the social sciences recommended or permission of instructor.

### 301 Comparative Politics (3)

An exploration of the theoretical concepts underlying the study of different political systems; in particular, issues of modernization, political culture, and relative economic and political performance. (Lec. 3) Pre: 201 or permission of instructor.

### 303 The Politics of the Vietnam War (3)

The politics of the Vietnam War addressed from a range of perspectives. Emphasis on the political, social, strategic, legal, and moral issues raised by the Vietnam War and its aftermath. (Lec. 3) Pre: 113 or 116 or permission of instructor.

### 304 Introduction to Public Administration (3)

An overview of the field of public administration. Consideration will be given to the relationship of public organizations with society. Examination of major administrative theories and their influence upon contemporary organizational environment. (Lec. 3) Pre: 113 or permission of instructor.

### 305 Politics in Rhode Island (3)

Exploration of politics and policy process in an age of New Federalism in Rhode Island. Examination of the political development of the state and the contemporary character of state politics. Pre: six credits in social sciences. (Lec. 3)

### 321 Politics and Problems of Israel (3)

Analysis of the evolution of political institutions and the dynamics of public policy in Israel. Emphasis on

contemporary political problems. (Lec. 3) Pre: 113 or 116 or permission of instructor. Professor Zucker's section is writing intensive. [WI]

### 341 Political Theory: Plato to Machiavelli (3)

Major political philosophies from Plato to Machiavelli and their influence on such key concepts as justice, equality, and political obligation. (Lec. 3) (L)

### 342 Political Theory: Modern and Contemporary (3)

Continuation of 341. Machiavelli to Marx and Freud. (Lec. 3) (L)

### 344 International Financial Economics

See Economics 344.

### 350 From Cold War to Cold Peace (3)

Provides essential political and historical background to understanding the evolution of U.S. and Soviet relations over the past 50 years. (Lec. 3) Pre: 116.

### 365 Political Parties and Practical Politics (3)

Analysis of the American party process with some attention to comparative party systems. History, organization, functions, methods, problems, and prospects for reform. (Lec. 3) Pre: 113. Professor Zucker's section is writing intensive. [WI]

### 368 Public Opinion (3)

Examination of public opinion and formative influences upon it. Role and implications of public opinion in governmental process. (Lec. 3) Pre: 113.

### 369 Legislative Process and Public Policy (3)

Analysis of American legislative bodies, particularly Congress, some attention to comparative legislatures. Structure, organization, functions of Congress analyzed in relation to its role in determining public policy. (Lec. 3) Pre: 113. Professor Zucker's section is writing intensive. [WI]

### 370 Politics and Media (3)

Analysis of the relationship between the mass media in the United States and the political process. Emphasis on the impact of the media on both domestic and foreign policy processes. Pre: 113 or 116, or permission of instructor.

### 375, 376 Field Experience in Practical Politics (1-3 each)

Supervised experience in local, state, and national units of government, political organizations, private and public community agencies. Students must have placement description, faculty supervisor, and outline of academic component of experience prior to registration. (Practicum) Pre: 12 credits in the social sciences including 6 credits in political science and permission of instructor. S/U credit. May be repeated for a maximum of 6 credits.

**377 Politics of China (3)**

Institutions of the Chinese system including the Communist Party, the state system, the bureaucracy, and the army. Emphasis on China's economic and social progress and relations with other nations. (Lec. 3) Pre: 116 or equivalent recommended.

**380 Civil Rights Movement**

See African and African American Studies 380.

**401 Comparative European Politics (3)**

Concepts and methodologies relative to the study of comparative politics. Structural-functional approach to survey of the formal and informal features of the political systems of Great Britain, France, Germany, Soviet Union, and one other country. (Lec. 3) (F)

**402 Environmental Policy and Politics (3)**

Seminar in the politics and public policy associated with environmental pollution. (Lec. 3) Pre: 113 and junior or senior standing.

**403 Global Ecopolitics (3)**

Seminar focuses on the international politics of global pollution, marine pollution, atmospheric pollution, tropical deforestation, and conservation. (Lec. 3) Pre: 116 or 402.

**404 The Assassination of John F. Kennedy (3)**

A rigorous examination of the JFK assassination, the political climate in which it occurred, the evidence surrounding it, and the theoretical explanations of who was responsible and why. (Lec. 3) Pre: Six hours of PSC beyond 113. Not for graduate credit.

**406 Russian Foreign Policy (3)**

An upper-level introduction to the issues of Russian foreign policy, including relations with newly formed states of the CIS. (Lec. 3) Pre: six credits in the social sciences recommended or permission of instructor. Offered in alternate years.

**407 Politics of the Russian Commonwealth (3)**

An upper-level introduction to the politics and society of Russia and the newly created states of the CIS. (Lec. 3) Pre: six credits in the social sciences recommended or permission of instructor. Offered in alternate years. (F)

**408 (or AAF 408) African Governments and Politics (3)**

Political developments in the new nations of sub-Saharan Africa. Main stress is functional: role of parties as integrative forces, democratic centralism, one-party states, African political thought, and common developmental problems. (Lec. 3) Pre: 113 and 116. (F)

**410 Issues in African Development**

See African and Afro-American Studies 410.

**415 Dynamics of Social Change in the Caribbean**

See African and African American Studies 415.

**420 Nonviolence and Change in the Nuclear Age (3)**

Focuses on the philosophies and political participation of individuals and movements working nonviolently for social change and conflict resolution from M. Gandhi and M.L. King to the present within America and globally. (Lec. 3) Pre: 113 or 116.

**422 Comparative American State Politics (3)**

Comparative study of American state politics and government, focusing on public policy formation and execution. Emphasis on contemporary issues. (Lec. 3) Pre: 221 and STA 308 or equivalents, or permission of instructor.

**426 Issues in Corrections**

See Sociology 426.

**431 International Relations (3)**

Analysis of the various theories of international relations and study of the major forces and events shaping the politics of the Great Powers. (Lec. 3) Pre: 116.

**432 International Government (3)**

General development of international government, with particular attention to structure, methods, and operations of the League of Nations, the United Nations, and related agencies. Problems of security, conflict resolution, and social and economic issues. (Lec. 3) Pre: 116.

**434 American Foreign Policy (3)**

Analysis of the institutions, techniques, and instruments of policy making and the execution of foreign policy. (Lec. 3) Pre: 116.

**440 The Politics of Being Mortal (3)**

Seminar on how attitudes toward death affect political values and priorities, especially in regard to capitalism and the threat of nuclear war. (Lec. 3) Pre: 341, 342, or permission of instructor.

**441 Women and Politics (3)**

Explores the role of women in the American political system, as voters, campaign activists, and office holders, and as members of organized groups in the policy-making process. (Lec. 3) Pre: 113 or permission of instructor. Not for graduate credit.

**443 Twenty-first Century Political Theory (3)**

Important political theorists of this century, particularly as they interpret the basis of political obligation and weigh the question of violent political change. (Lec. 3) Pre: permission of instructor. Offered every third year.

**455, 456 Directed Study or Research (3 each)**

Special work arranged to meet the needs of individual students who desire advanced work in political science. (Independent Study) Pre: permission of chairperson.

**461 The American Presidency (3)**

Presidential leadership and decision making, with emphasis on growth in power and prestige of the presidency, exercise of presidential influence in conduct of government, and presidential initiative in formulating and developing national policies and priorities. (Lec. 3) Pre: 113.

**466 (or AAF 466) Urban Problems (3)**

Contemporary and emerging problems of urban affairs. Discussion, reading, and assignments on the interaction among urban change, development of social institutions, and formation of public policy. (Lec. 3) Pre: 113.

**471 Constitutional Law (3)**

The Supreme Court as a political institution in American democracy. Analysis of leading constitutional decisions exploring: adaptation of governmental powers to changed conditions of society, development and function of judicial review, and dynamics of decision making in the Supreme Court. (Lec. 3) Pre: 113.

**472 Civil Liberties (3)**

The problem of human freedom examined in the context of the fundamental rights guaranteed to individuals by the American Constitution. Emphasis on religious liberty, freedom of expression, racial equality, fair criminal procedures, and the protection of personality and privacy. (Lec. 3) Pre: 113.

**476 Policy Issues in Criminal Justice**

See Sociology 476.

**481, 482 Political Science Seminar (3 each)**

Intensive studies in various important fields in political science. Class discussion of assigned readings and student reports. Emphasis on independent research. (Seminar) Pre: 6 credits in political science beyond 113 and 116.

**483 Political Process: Policy Formulation and Execution (3)**

Interrelationships of policy development and administration with particular attention devoted to participants in the process. Specific activities of the executive branch and government policies that affect the structure, composition, and function of the bureaucracy. (Lec. 3) Pre: 113 or permission of instructor.

**485 The Politics of Children's Rights (3)**

Explores the political aspects and their relationship to socioeconomic and cultural factors of major issues that affect children's lives. Focuses on individual and societal rights and responsibilities in America and internationally. (Seminar) Service learning. Pre: six credits in social sciences recommended or permission of instructor.

**487 Rebuilding Our Communities: Theory and Practice (3)**

Seminar examines theories and practices of participatory citizenship in contemporary America. Explores individual and communitarian rights and responsibilities within a democratic civic culture. Includes a 40-hour community service experience. (Seminar) Service learning. Pre: senior and graduate level or juniors by permission.

**491 Principles of Public Administration (3)**

Principles of public administration, structure and organization, financial management, administrative responsibility, and the relation between the administration and other branches of government. (Lec. 3) Pre: 113.

**498 Public Administration and Policy Formulation (3)**

Identification and analysis of factors which affect formulation of public policy, including roles of the executive, the bureaucracy, the legislature, and special interest groups. Evolution of the policy process, particularly at the state and local levels of government. (Lec. 3) Pre: 491 or permission of chairperson.

**501 Administrative Theory (3)**

Theoretical constructs and models in fields of public administration; theories of Weber, Riggs, Dorsey, Simon, Presthus. Lower-level models in subfields of organization, communications, and decision making. Task-oriented subject matter such as personnel, budget, and program administration related to theoretical formulations which seek to explain them. (Lec. 3) Pre: 491 or permission of instructor.

**502 Techniques of Public Management (3)**

Principles and techniques employed in the administration of activities of the public service, such as administrative planning, project scheduling, and budgeting. (Lec. 3) Pre: 491 or permission of instructor.

**503 (or LRS 503) Problems in Public Personnel Administration (3)**

Development of personnel administration, including problems of recruitment, examination, promotion, and staffing within public service. Emphasis on evaluation of employee performance and collective bargaining in public service. (Lec. 3) Pre: graduate standing or permission of instructor.

**504 Ethics in Public Administration (3)**

This course explores through case studies, class discussion, films, and readings how ethical deliberation in the public sector is an essential commitment and skill for public administrators. (Seminar) Pre: graduate standing or permission of instructor.

**505 (or SOC 505) Public Program Evaluation (3)**

Research design and methodologies associated with the evaluation of governmental programs and

activities. (Lec. 3) Pre: STA 308 or equivalent or permission of instructor.

**506 Seminar in Budgetary Politics (3)**

Examination of federal, state, and local fiscal and budgetary processes, focusing on the politics of the budgetary process and models of budgeting, with emphasis on contemporary issues. (Seminar)

**507 Government Financial Administration (3)**

Political, administrative, and technical elements of government financial management in public policy settings are examined. Special emphasis is placed on local and state governments and public authorities. (Seminar) Pre: graduate standing or permission of instructor.

**512 Marine Science and Policy Analysis**

See Marine Affairs 512.

**521 International and Comparative Trade Unions and Labor Relations**

See Labor and Industrial Relations 521.

**523 Seminar in Comparative Public Administration (3)**

Theory, practice, and organization of selected European and developing nations' administrative systems. Analysis of selected policies. Influence of English and French systems on developing systems. Structure-function and ecological analysis. (Seminar) Pre: 491, 501, or permission of instructor.

**524 Seminar in Public Policy Problems (3)**

In-depth exploration of selected problems of policy formulation: intergovernmental relations, regionalization, citizen participation and control, priority setting for public sector programs. (Seminar) Pre: 491, 501, or permission of instructor.

**543 Labor Relations and Collective Bargaining: Public Sector**

See Labor Studies 543

**544 Democracy and Its Critics (3)**

Seminar examining the roots of modern democracy in the social contract theories and analyzing the quality and limits of self-determination in these theories in the light of contemporary politics. (Lec. 3) Pre: 341, 342, or permission of instructor.

**546 Peace and World Order Studies (3)**

This seminar explores various approaches globally to peacebuilding, world order, and community. Emphasizes conflict resolution, from local to transnational levels, and the search for social justice and human unity. (Seminar) Pre: 420 or permission of instructor.

**553 Scope and Methods of Political Science (3)**

Study of political science as a discipline, its development in relation to other social sciences, and survey of political theories, concepts, and analytic models. (Seminar) Pre: graduate standing.

**555, 556 Directed Study or Research (3 each)**

Special work arranged to meet the individual needs of graduate students in political science. (Independent Study) Pre: permission of chairperson.

**573 Administrative Law (3)**

Legal aspects of interaction between government agencies, individuals, and public interest groups. Systematic analysis of leading cases, evaluating the courts as an instrument for protecting the individual's rights in administrative action. (Lec. 3) Pre: 113.

**577 International Ocean Law**

See Marine Affairs 577.

**580 Seminar in International Relations Theory (3)**

A critical treatment of major international relations theories beginning with an analysis of core theoretical concepts. (Seminar) Pre: honors seniors with permission of instructor or graduate standing.

**581, 582 Special Topics Seminar (3 each)**

Master's-level seminar on special topics in political science not regularly covered in other courses. (Seminar) Pre: graduate or senior standing in political science or permission of instructor. May be repeated up to five times for a total of 15 credits with different topic.

**583 Seminar in American Politics (3)**

Critical consideration of central issues in American political institutions, behavior, and policy making. (Seminar) Pre: honors seniors with permission of instructor or graduate standing.

**584 Seminar in Advanced Comparative Theory (3)**

A critical treatment of the major methodological approaches used in comparative politics beginning with an analysis of core theoretical concepts. (Seminar) Pre: graduate standing; undergraduates only with permission of instructor.

**590 Internship in Public Administration (3-6)**

Participation at an administrative agency under supervision of agency head and a faculty member. Planning, personnel management, research organization, budgeting, interdepartmental relations, informal liaisons that are the hallmark of effective administration. (Practicum) Pre: permission of M.P.A. director. May be taken as one 6-credit unit or two 3-credit units.

**595 Problems of Modernization in Developing Nations**

See Resource Economics 595.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Portuguese (POR)

*Section Head:* Professor McNab

### 101 Beginning Portuguese I (3)

Fundamentals of modern European Portuguese. Emphasis on standard pronunciation, development of familiarity with most common grammar structures, and acquisition of working vocabulary. (Lec. 3) Pre: no prior Portuguese is required. Will not count toward the language requirement if the student has studied Portuguese for more than one year within the last six years. (F)

### 102 Beginning Portuguese II (3)

Continuation of 101. (Lec. 3) Pre: 101 or equivalent or permission of instructor. (F)

### 103 Intermediate Portuguese I (3)

Intensive and extensive reading of moderately difficult Portuguese prose, review of grammar structures, idiomatic expressions, conversation practice based on readings. (Lec. 3) Pre: 102 or equivalent or permission of instructor. (F)

### 104 Intermediate Portuguese II (3)

Continuation of 103. Readings of more difficult texts. Class discussion and reports on supplementary readings. (Lec. 3) Pre: 103 or equivalent or permission of instructor. (F)

### 200 Portuguese for Spanish Speakers (3)

An accelerated course in Portuguese for Spanish speakers. (Lec. 3) Pre: SPA 205 or the equivalent. Intended for students in the Spanish International Engineering Program.

### 205, 206 Advanced Portuguese (3 each)

Practice in speaking and writing standard Portuguese. Understanding varieties of Portuguese. Materials of cultural, intellectual, and professional interest. (Lec. 3) Pre: 104 or equivalent or permission of instructor.

### 335, 336 Topics in the Literature of the Portuguese-Speaking World (3 each)

Selected topics in the literatures of continental Portugal and the adjacent islands, Brazil, Cape Verde, Angola, Mozambique. (Lec. 3) Pre: 206 or equivalent or permission of instructor. 205 or 206 may be taken concurrently with permission of instructor. May be repeated for credit as often as topic changes.

### 497, 498 Directed Study (3 each)

For the advanced student. Individual study and reports on problems of special interest. (Independent Study) Pre: one 300-level course in Portuguese, acceptance of project by member, and approval of chair. Not for graduate credit.

## Prior Learning Assessment (PLA)

### 100 Prior Learning Assessment Portfolio Development (1)

Identification through self-assessment of student prior learning and appropriate methods for seeking credit. Analysis and application of the process for developing a prior learning portfolio. (Seminar) Pre: matriculated status and permission of the student's academic dean. Offered through the Alan Shawn Feinstein College of Continuing Education. S/U only.

## Psychology (PSY)

*Chairperson:* Professor Valentino

### 103 Towards Self-Understanding (3)

Individual and social problems of normal persons. Personality development, social behavior, and adjustment reactions with emphasis on increasing awareness of personal and interpersonal functioning. (Lec. 3) (S)

### 113 General Psychology (3)

Introductory survey course of the major facts and principles of human behavior. Prerequisite for students interested in professional work in psychology or academic fields in which an extended knowledge of psychology is basic. (Lec. 2, Rec. 1) (S)

### 232 Developmental Psychology (3)

Comprehensive understanding of human development and growth from birth to senescence. (Lec. 3) Pre: 113. (S)

### 235 Theories of Personality (3)

Critical survey of the major theories of personality. Emphasis will be placed on the "normal" personality. (Lec. 3) Pre: 113. (S)

### 254 Behavior Problems and Personality Disorders (3)

Evaluation of the more serious behavioral disorders as found in the major forms of character disorders, psychoneuroses, and psychoses. Theories of causation, development and effects of anxiety and defense mechanisms, and interpretation of symptoms and methods of treatment. (Lec. 3) Pre: 113. (S)

### 261 The Alcohol-Troubled Person: Introductory Concepts (3)

Introductory and basic concepts in alcohol trouble: prevention, identification, early intervention, treatment, education. (Lec. 3)

### 275 Alcohol Use and Misuse (3)

Examination of biological, psychological, and social determinants of alcohol use and misuse. Prevention, early intervention, and treatment approaches also covered. (Lec. 3) Pre: 113.

### 300 Quantitative Methods in Psychology (3)

Basic concepts and techniques of quantification in psychology. Emphasis on application of certain descriptive and inferential statistical tools in the analysis of psychological measurements of behavior. (Lec. 3) Pre: 113, at least one college-level mathematics course, and sophomore standing.

### 301 Introduction to Experimental Psychology (4)

Lectures, demonstrations, and laboratory experiments introduce the student to basic methodological principles and experimental techniques applied in psychological research. (Lec. 3, Lab. 2) Pre: 300.

### 305 Field Experience in Psychology (3)

Direct contact with settings and populations served by psychologists. Emphasis on understanding models and theories in relation to practical problems. Topical sections may include: a) pre-clinical, b) community, c) laboratory, and d) organizational applications. (Practicum) Pre: 113 and permission of instructor. May be repeated for a maximum of 6 credits.

### 310 History and Systems of Psychology (3)

Origins of psychological inquiry and theories of psychology. Transformations of theories and methods of inquiry through the history of our culture including contemporary systems and models of psychological functioning. (Lec. 3) Pre: 113. (L)

### 334 Introduction to Clinical Psychology (3)

Emphasis on scope of the field, functions of the clinical psychologist, methods used, and problems encountered, both scientific and professional. (Lec. 3) Pre: 254.

### 335 The Psychology of Social Behavior (3)

Conceptual and empirical analyses of individual behavior in social contexts; attention to social motivation, attitude development and change, liking, conformity, aggression, altruism. (Lec. 3) Pre: 113 and junior standing or permission of instructor.

### 361 Learning (3)

Learning process in humans and non-humans, focusing on principles and methods. This course features operant-learning and behavior-modification principles and examples from real life. (Lec. 3) Pre: 301 or permission of instructor.

### 371 Laboratory in Learning (1)

Laboratory experiments in learning (primarily animal) designed to parallel course materials in 361. (Lab. 2) Pre: 301, credit or concurrent enrollment in 361, or permission of instructor.

### 381 Physiological Psychology (3)

Physiological mechanisms operative in human behavior. Sensory, neural, endocrine, and response systems as related to sensation, perception, attention, emotions, motivations, and learning. (Lec. 3) Pre: junior standing.



**382 Research Methods in Physiological Psychology (3)**

An introduction to the principles and techniques of experimentation in physiological psychology, such as brain stimulation and lesions, electrophysiology, neuropsychological testing, and pharmacology. (Lab. 6) Pre: 381 and permission of instructor.

**384 Cognitive Psychology (3)**

An examination of contemporary research and theories on mental activities. Topics will include: perception, pattern recognition, attention, memory, problem solving, language, consciousness, and artificial intelligence. (Lec. 3) Pre: 113 and 301 or equivalent. In alternate years.

**385 Perception (3)**

Sensory function, development of perception, perception of space, color, sound, and complex events. (Lec. 3) Pre: 113 and 300, or equivalent. In alternate years.

**388 The Psychology of Language (3)**

Study of language processes in light of contemporary theories and research. Topics include speech production, perception, memory, comprehension, language and the brain, language acquisition, reading, language, and thought. (Lec. 3) Pre: junior standing. In alternate years.

**399 (or AAF 399) Introduction to Multicultural Psychology (3)**

Introductory course focusing on multiculturalism as a major paradigm. Emphasizes the meaning of multiculturalism and associated principles, concepts, and sociocultural factors as related to assessment, intervention, and research. (Lec. 3) Pre: 113 or 103.

**405 Psychological Anthropology**

See Anthropology 405.

**430 Intimate Relationships**

See Sociology 430.

**432 Advanced Developmental Psychology (3)**

Major issues in developmental psychology. Emphasis on research in Piaget, Erikson, Bruner, Kagan, and Moss. Includes effects of infant care, sex typing, parental discipline, and developmental aspects of intellectual and perceptual growth. (Lec. 3) Pre: 232.

**434 Psychological Testing (3)**

Measurement procedures employed in the measurement of intelligence, aptitudes, abilities, attitudes, interests, and personality. Focus on psychometric principles of associated with the various tests. (Lec. 3) Pre: 300 or equivalent.

**436 Psychotropic Drugs and Therapy**

See Biomedical Sciences 436.

**442 Psychology of Exceptionality (3)**

Survey of the major issues underlying the classification, institutionalization, and treatment of persons with mental, physical, psychological, and educational disabilities. Specific topics include social attitudes toward exceptionalities, past and current legislation, special education services, and transitions into community life and the workplace. (Lec. 3) Pre: junior or senior standing.

**460 The Substance-Troubled Person (3)**

Presents theoretical and applied material on alcohol and other mood-altering substances of abuse. Relevant for alcohol and substance abuse counselors, personnel administrators, and other social service workers. (Lec. 3) Offered through the Alan Shawn Feinstein College of Continuing Education.

**464 Humanistic Psychology (3)**

Discussion of humanistic approaches to the understanding and direction of behavior. Emphasis on contemporary writers such as Rogers, Maslow, May, Moustakas. Discussions of phenomenology and existentialism. (Lec. 3) Pre: 235 and junior standing. In alternate years. Not offered every year.

**465 Introduction to Crisis Intervention (3)**

Interventions for various types of emergencies including substance abuse and functional or organic disorders. (Lec. 3) Pre: 254 and permission of instructor.

**466 Child Sexual Abuse (3)**

Current theorizing regarding the causes of sexual abuse of children will be presented, as well as the short- and long-term effects of such abuse. Management of problems will be followed, from disclosure through current state-of-the-art practices in treatment. Issues in prevention, court cases, and investigation will be reviewed. (Lec. 3) Pre: senior status and permission of instructor. Not for graduate credit.

**470 Topics in Social Psychology (3)**

Empirical and conceptual approaches to a major topic in contemporary social psychology. Topics will vary from semester to semester. (Seminar) Pre: 113 and 335.

**471 Applied Behavioral Analysis and Remediation (3)**

Study and application of behavioral approaches used to analyze and remediate behavioral problems of children and adults in educational and human service settings and everyday life. (Lec. 3) Pre: 361 or permission of instructor. Offered through the Alan Shawn Feinstein College of Continuing Education only.

**473 Practicum in Behavioral Psychology (3)**

Supervised, on-site field experience in applications of behavioral approaches in an educational or human service setting. (Practicum) Pre: 471 or permission of instructor.

**479 Contemporary Problems for Modern Psychology (3-12)**

Central issues and recent developments in the field. Topics limited each semester to one of the following: a) personality, b) learning, c) methods and design, d) developmental, e) motivation, f) perception, g) clinical, h) general, and i) humanistic psychology. (Seminar) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**480 Psychology of Women (3)**

Discussion of psychological research and theories on the psychology of girls and women from a multicultural perspective. Topics include personality theories, gender similarities and differences, biological aspects of sex and gender, cultural images of women, sexuality, relationships, motherhood, work and achievement, physical and mental health. (Lec. 3) Pre: 113 and at least one 200-level psychology course.

**489 Problems in Psychology (3)**

Advanced work in psychology. Course will be conducted as seminar or as supervised individual project. Students must obtain written approval from proposed faculty supervisor prior to registration. (Independent Study) Pre: senior or graduate standing or permission of instructor. May be repeated once.

**499 Psychology Practicum (1-6)**

Individual and group projects applying psychology in clinical or laboratory settings. (Practicum) Pre: senior standing or permission of instructor. May be repeated for a maximum of 6 credits. Not for major credit in psychology. S/U only.

**505 Community Psychology (3)**

Introduction to community psychology; study and change of individual's interaction with community systems; theoretical and empirical models, intervention strategies, and research methods relevant to community psychology. (Lec. 3)

**517 (or STA 517) Small N Designs (3)**

A survey of Small N experimental methodology appropriate for repeated observations on a single unit or individual. Methods include quasi-experimental designs, interrupted time series, and multivariate time series. Applications in applied research, particularly behavioral intervention. (Seminar) Pre: 532 and 533. In alternate years.

**532 Experimental Design**

See Statistics 532.

**533 Advanced Quantitative Methods in Psychology (3)**

Advanced quantitative methods applied to psychology. Survey of methods such as multiple regression, multivariate analysis of variance, discriminant analysis, canonical correlation, principal component analysis, and factor analysis. Applications in-

volve practice with computer programs. (Lec. 2, Lab. 2) Pre: 532.

**540 (or EDC 540) Learning Disabilities: Assessment and Intervention (3)**

Applications of early screening batteries; remedial programs for various disabilities, including behavioral programs and methods for older children and adolescents. Emphasis on pragmatic application of skills for detection and treatment. (Lec. 3) Pre: permission of instructor. May be repeated as A and B for a maximum of 6 credits.

**544 (or EDC544) Reading Acquisition and Reading Disability: Research and Implications for Practice (3)**

Examination of research on the language, cognitive, and reading characteristics of children who successfully learn to read and of those who encounter difficulty. Additional focus on the implications and use of the research for assessment and instruction. (Lec. 3) Pre: graduate standing or permission of instructor.

**550 Operant Analysis of Behavior (3)**

Introduction to the principles of operant conditioning with emphasis on the use of these principles in the analysis and change of behavior in real-life settings such as schools and families. (Lec. 3) In alternate years.

**554 Alternative Therapies(3)**

Theory and practice of a variety of individual and group techniques that can be integrated into one's present style of helping. (Lec. 2, Lab. 2) Pre: professional and/or graduate standing.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**600 Multicultural Issues in Psychology: Theory, Research, and Practice (3)**

Focus is on general issues and concepts relevant to a psychology that is concerned with multicultural populations as sources of enrichment for theory, research, and practice. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Seminar) Pre: graduate standing.

**601 Physiological Psychology (3)**

An advanced consideration of physiological research on neural, endocrine, and response systems as they relate to attention, motivation, emotion, memory, and psychological disorders. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 2, Lab. 2)

**602 Learning and Motivation (3)**

Empirical and theoretical analysis of the basic principles of acquisition and loss of habits. Typically

organized to deal with respondent and operant conditioning, and their relationship to reinforcement and motivation. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3) Pre: undergraduate learning course.

**603 Development (3)**

Theoretical, methodological, and applied issues in life span development, including cognitive, perceptual, psychomotor, affective, and social development. Typically organized. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**604 Cognitive Psychology (3)**

A survey of the theoretical and methodological issues in human cognition. Topics include pattern recognition, attention, memory, language, problem solving. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**605 Personality (3)**

Reading of primary source materials from major personality theorists relevant to a particular topical emphasis. Application and comparative evaluation of the theories studied. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**606 Social Psychology (3)**

Intensive exploration of the methods, theory, and database of contemporary social psychology focusing on salient issues that clarify significant topics in this area. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**607 Advanced Psychopathology (3)**

A review of the multicultural, theoretical, clinical, and empirical literature related to the development, classification, and diagnosis of psychopathology. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**608 Theories and Systems (3)**

An in-depth analysis of the origin and logical structure of major systematic approaches to psychology. Emphasis on significant recurrent controversies. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3) Pre: graduate standing.

**609 Perception (3)**

A survey of topics in the psychology of perception, including sensory function; psychophysical models, measurement, and scaling; visual perception; and methods for analyzing perceptually guided behavior. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**610 (or STA 610) Parsimony Methods (3)**

Multivariate procedures designed to reduce the dimensionality and help in the interpretation of complex data sets. Methods include principal components analysis, common factor analysis, and image analysis. Related methods: cluster analysis and multidimensional scaling. Applications involve the use of existing computer programs. (Lec. 3) Pre: 533 or STA 541 or equivalent. In alternate years. Next offered 2002-03.

**611 Methods of Psychological Research and Experimental Design (3)**

Provides the student of psychology with a knowledge of research methodology and the techniques of experimental designs. It prepares for the development of thesis problems of graduate students in psychology and related disciplines. (Lec. 3) Pre: 532 and 533.

**612 (or STA 612) Structural Modeling (3)**

Theory and methodology of path analysis with latent variables. Discussion of "causation" and correlation, Confirmatory Factor Analysis, Measurement and Structural Equation models. Practical applications using current computer programs (e.g. EQS). (Lec. 3) Pre: 533 or 610.

**613 Qualitative Research and Analysis in Psychology (3)**

Introduction qualitative methods and analyses with a focus on interviews, focus groups and visual data methods. Counts as a "core" methodology course for graduate study in psychology and includes historical and contemporary perspectives in psychology. (Lec. 2, Lab 2) In alternate years. Pre: graduate standing

**615 Collaborative Research in Psychology (0-3)**

Collaborative approaches to methods of psychological inquiry. Special emphasis on topics that can involve students at varying levels of research skill. Format includes weekly seminars and colloquia. (Seminar) May be repeated. S/U credit.

**625 Seminar: Social Psychology (3)**

Emphasis on a major area in contemporary social psychology. Empirical studies analyzed for their relevance to theoretical and applied issues; students will design an original investigation. (Seminar) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 6 credits with different topic.

**641 Introduction to Psychotherapy (3)**

An analysis of the major systems of psychotherapy. Developing an integrative, eclectic model through identifying the processes of change that are the core of effective therapy. (Lec. 3)

**642 Introduction to Psychotherapy Practice (3)**

Instruction and practice in the basic interviewing skills and clinical techniques necessary for

practicum courses in psychotherapy. Seminar format with some lecture material, role playing, structured experiential exercises, case presentation, and discussion and videotape illustration. (Seminar) Pre: 641. S/U credit.

#### **644 Family Therapy (3)**

Introduction to theories and techniques of family assessment and family therapy. Seminar format with videotape illustrations, case presentation and discussion, lecture, and selected experiential exercises. (Lec. 3) Pre: permission of instructor. Not offered every year.

#### **647 Child Therapy (3)**

Seminar discusses issues, techniques, and research related to behavior changes in children and their families. Aspects of therapy, the role of behavioral approaches, and the participation of parents will be explored. Direct, supervised experience is included in this course. (Lec. 3) Pre: participation in the Psychological Consultation Center.

#### **660 Clinical Assessment and Decision Making (3)**

Covers basic principles and methods for decreasing error and increasing accuracy in applied clinical work, such as clinical versus actuarial judgment and use of base rates. (Lec. 3) Pre: course in psychological testing.

#### **661 Psychological Services I: Administration and Interpretation of Cognitive Tests (3)**

Instruction and practice in administration and interpretation of contemporary cognitive tests; individual intelligence tests of both general and specific abilities. Rationale, research evidence, clinical applications. (Lec. 3) Pre: 660.

#### **662 Psychological Services II: Administration and Interpretation of Personality Tests (3)**

Instruction and practice in the administration and interpretation of instruments used in the assessment of personality. Emphasis on tests such as the MMPI, Rorschach, TAT. Rationale, research evidence, and clinical application. (Lec. 2, Lab. 2) Pre: 661.

#### **663 Child and Adolescent Personality Assessment and Intervention (3)**

Psychological assessment and intervention with children and adolescents, focused on personality functioning, behavioral, social, and emotional problems. Emphasis on assessment theory and methods as linked to empirically supported intervention approaches. (Lec. 2, Lab. 2) Pre: graduate standing in psychology and 665, 661 or permission of instructor.

#### **665 Developmental Psychopathology (3)**

Child and adolescent psychological disorders are conceptualized through a developmental perspective, and contemporary research on etiology, diagnosis, course, prognosis, and treatment/management is examined. (Lec. 3) Pre: 603 or equivalent.

#### **666 Seminar: Ethical and Legal Issues in Psychology (3)**

Ethical, legal, and professional issues as they relate to the provision of psychological services and psychological research. Emphasis is on the study of ethical issues and the examination of the development of professional standards as they relate to the areas of clinical psychology practice, school psychology practice, and applied research practice. (Seminar)

#### **668 School Psychological Consultation (3)**

Historical and contemporary perspectives on consultation are reviewed. Theory, research, and practice are discussed from various consultation models including mental-health, behavioral, and organizational. The focus is on content and process of consultation in various clinical and educational settings. (Lec. 3) Pre: 661 and 663 or equivalent.

#### **670 Field Experience in Psychological Services (1-12)**

Practicum placements and internships are available in a variety of agencies clinical and school settings under supervision. (Practicum) S/U credit.

#### **672 Individual Clinical Practicum (3-9)**

Introductory experience in dealing with clinical problems in a variety of clinical settings under supervision. (Practicum) Pre: 661, 662. May be repeated for a maximum of 9 credits. S/U credit.

#### **674 Clinical Practices: Therapy (1-12)**

Specialized techniques of clinical interviewing, counseling, and psychotherapy. Critical discussions of student's own supervised therapy sessions. (Practicum) Pre: 607 and 641. May be repeated for a maximum of 12 credits.

#### **676 Neurological Correlates of Psychopathology (3)**

Functioning and physiology of the central nervous system with particular attention to determining how nervous-system disruption and injury are manifested in behavioral disorder. Techniques used to evaluate and interpret neuropsychological functioning. (Lec. 2, Lab. 2) Pre: permission of instructor. Not offered every year.

#### **681 Special Problems in School Psychology (3-9)**

Role of the psychologist in the school setting. Several theoretical and practical issues concerned with the value of psychological theory, administrative philosophy, and school organization are explored. (Seminar) May be repeated for a maximum of 9 credits.

#### **683 (or EDC 683) Psychology of the Exceptional Child (3)**

Social, psychological, and educational factors that constitute the matrix of concerns with the exceptional individual in the school and community. Recent innovations in public and private education

and habilitation. Research issues and legislation discussed evolve into student studies. (Lec. 3)

#### **687 (or EDC 687) Seminar: Topics in the Psychology of the Exceptional Individual (3)**

Survey of topics and current issues in the treatment, needs, and understanding of the psychology of specific exceptionalities. (Seminar) May be repeated for a maximum of 9 credits with different topics.

#### **688 Developmental Neuropsychology Seminar (3)**

Conceptual overview emphasizing changing relationships between human central nervous system and behavior from conception through adolescence. Normal and abnormal neurodevelopment, theoretical principles, assessment and intervention issues, and selected research methodologies. (Seminar) Pre: 601 or equivalent.

#### **690 Seminar: Contemporary Issues in Psychology (3-12)**

Recent developments and current issues. Rigorous exploration of experimental, applied, and theoretical literature. (Seminar) May be repeated for a maximum of 12 credits.

#### **692, 693 Directed Readings and Research Problems (3-12 each)**

Directed readings and advanced research work under the supervision of a member arranged to suit the individual requirements of the students. (Independent Study)

#### **695 Seminar: Teaching Psychology (3)**

Primarily a seminar in the teaching of psychology at the undergraduate level. Includes a consideration of general issues in college teaching, preparation of a course proposal, and sample presentation. (Seminar)

#### **696 Practicum: Teaching Psychology (3)**

Practicum for students teaching a college-level psychology course. Supervision of course preparation, presentation, and evaluation. (Practicum) S/U credit.

#### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Public Relations (PRS)**

*Coordinators:* Professor Wood, Communication Studies, and Professor Levin, Journalism

#### **340 (or JOR 340) Public Relations (3)**

Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communication; analysis of publications produced as a part of public relations. (Lec. 2, Lab. 2) Pre: junior standing and JOR 220 with a grade of C or better.

**441 (or JOR 441) Public Relations Practices (3)**  
Practical application of traditional PR methods in solving problems in a variety of markets. Explores fundamental agency operations, client-agency relationships. Combines practical experience with individual projects, programs, and campaigns. (Practicum) Pre: 340. Not for graduate credit.

**491 Public Relations Internship (3 or 6)**  
Supervised experience in public relations. Requires a minimum of 120 hours (3 credits) or 240 hours (6 credits). Weekly class meeting. May be repeated; maximum of 6 credits allowed toward graduation. Pre: public relations majors only; 340, 441, COM 306 and JOR 341. Permission of instructor and application required. Not for graduate credit.

## Religious Studies (RLS)

*Chairperson:* Professor Zeyl (Philosophy)

**111 Judaism, Christianity, and Islam (3)**  
Comparative study of the teachings, the histories, and the practices of the three religions of Abraham; emphasis on their teachings. (Lec. 3) (L)

**125 Biblical Thought (3)**  
Selected portions of the Old and New Testaments with emphasis on their positive contribution to the philosophy of the Jewish and Christian religions. (Lec. 3) (L)

**126 The Development of Christian Thought (3)**  
History of religious and philosophical ideas, development of the teachings of Christianity. Emphasis to meet needs and interests of students. Historical nature of material suitable for liberal education without regard to student's religious affiliation. (Lec. 3) (L)

**131 Introduction to Oriental Philosophies and Religions (3)**  
Introductory study of the main philosophical and religious ideas in the Orient, with emphasis on Hinduism, Buddhism, Confucianism, and Taoism. (Lec. 3) (F) (L)

**151 The Jewish Experience (3)**  
Examines Judaism's history, customs, culture, and beliefs. (Lec. 3)

## Resource Development Education (RDE)

*Coordinator:* Associate Professor Mallilo

**486 Internship in Agricultural and Extension Education (1-6)**  
Provides experiential learning opportunities related to agricultural education and/or Cooperative Extension education. (Practicum) May be repeated for a maximum of 6 credits. Not for graduate credit.

## Resource Economics (REN)

*Chairperson:* Professor Anderson

**101 Freshman Inquiry into Environmental and Natural Resource Economics (1)**  
Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Environmental and Natural Resource Economics. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**105 Introduction to Resource Economics (3)**  
Application of microeconomic principles to selected resource problem areas. The market mechanism and its alternatives are examined as methods of resolving contemporary resource use problems. (Lec. 3) (S)

**110 Multimedia Presentation of Environmental Issues (3)**  
Research of pressing environmental issues and creation of multimedia presentations using computer technologies to combine slides, video, audio, and computer graphics. No technical knowledge or computer skills are necessary. (Lec. 2, Lab. 2)

**310 Economics for Environmental Resource Management and Policy (3)**  
Economic approaches to natural resource use and environmental policies. Exploring measures of the "economic value of environment." How scientists, managers, and markets can affect the environmental quality of life. (Lec. 3) Pre: 105 or ECN 201.

**325 Planning and Managing a Small Natural Resources Firm (3)**  
Directed toward students with an interest in managing a small marine, agricultural, or other natural resources firm. (Lec. 3) Pre: 105 or ECN 100 or 201 or permission of instructor.

**345 International Trade and the Environment (3)**  
Analysis of the economic effects of natural resource and environmental management policies on international trade in natural resource products, and of international trade policies on worldwide resource use and environmental quality. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor.

**356 (456) Tourism Economics (3)**  
Application of economic principles and research methods to tourist and tourism industry behavior. Practical research methods for assessing economic, social and environmental benefits and costs of tourism development are examined. (Lec. 3) Pre: 105 or permission of instructor.

**410 Fish and Wildlife Economics (3)**  
Institutional, biological, and economic factors affecting the use of fish and wildlife resources. Economic analysis is applied to problems of fish and wildlife management in both marine and terrestrial

ecosystems. (Lec. 3) Pre: 310 or ECN 328 or 323 or permission of instructor.

**415 Environmental Harms and Sanctions**  
See Economics 415.

**432 Environmental Economics and Policy (3)**  
Economic analysis of policies that address environmental and natural resource problems. Topics include pollution-control policies, economic incentives, and the optimal use of renewable and nonrenewable natural resources. (Lec. 3) Pre: 105 or ECN 201.

**435 Aquacultural Economics (3)**  
Economics of international and domestic development of aquaculture, environmental and resource regulations on aquaculture, and management of and decision making in aquacultural enterprises. Analysis of public and private aquaculture production and marketing. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor.

**440 Benefit-Cost Analysis (3)**  
Basic concepts in benefit-cost analysis. Measurement, comparison of benefits and costs over time, and criteria for evaluation of projects and public policies. Problems and case studies in evaluation of current natural resources issues. (Lec. 3) Pre: 105 or permission of instructor.

**441 (341) Markets, Trade and Natural Resources (3)**  
Analysis of the role of markets in the valuation, management, and distribution of natural resources (esp. fish); price analysis; international trade; channels of distribution; commodity futures and options markets; marketing information; regulations and controls; cooperative marketing. (Lec) Pre: 105 or ECN 201 or permission of instructor.

**491, 492 Special Projects (1-3 each)**  
Workshop for advanced students where individuals or small groups are assigned projects requiring the analysis of natural resource and allocation problems with particular emphasis on marine resources. (Independent Study) Pre: permission of chairperson.

**501 Graduate Seminar in Natural Resource Economics (1)**  
Presentation of research and discussion of current issues and methodologies in environmental and natural resource economics. (Seminar) Enrollment is required of all full-time graduate students in residence; exceptions made with permission from chairperson. No more than one credit may be taken for program credit. S/U credit.

**502 Research Methodology in Environmental and Natural Resource Economics (3)**  
Practice and methods of applied research in environmental and natural resource economics. Topics include philosophical foundations, research project

design, reporting research results, and criticism of proposals and research papers. (Lec. 3) Pre: 528 and 576 or permission of instructor.

#### **514 Economics of Marine Resources (3)**

Role of economics in management of estuarine and marine resources. Particular attention to resource valuation, environmental issues, and management of renewable and non-renewable resources. (Lec. 3) Not for graduate credit in resource economics.

#### **518 Mathematics for Economists (2 or 4)**

Introduction to mathematical methods in economics and business. Economic applications of constrained and unconstrained optimization, matrix algebra, primal and dual functions, eigen roots, with illustrations from economics, finance, and environmental and natural resource economics. (Lec 2 or 4) Pre: ECN 328 and MTH 131 or equivalent or permission of instructor.

#### **520 Production Economics (2)**

Production in natural resource economics. The formulation and estimation of production functions. Technological change in economic growth and its measures. New directions in production theory and applications. (Lec. 2) Pre: at least two credits of 518, or MTH 131.

#### **522 Computer Intensive Methods in Resource Economics (3)**

Use of selected software packages to analyze topics and numerical problems in environmental and natural resource economics, including GAMS/MINOS, spreadsheets, Crystal Ball, Matlab, GIS, and SAS. (Lec. 2, Lab. 2) Pre: 518 or equivalent (May be taken concurrently).

#### **527 (or ECN 527) Macroeconomic Theory (3)**

Static and dynamic models of aggregate economic behavior developed and analyzed. (Lec. 3) Pre: ECN 327 and 375 or equivalent, or permission of instructor.

#### **528 (or ECN 528) Microeconomic Theory (3)**

Analytic tools of optimization. Neoclassical price and production theory. Neoclassical theory of consumer and producer behavior, price and distribution, partial and general equilibrium and welfare economics. (Lec. 3) Pre: ECN 328 and 375 or equivalent, or permission of instructor.

#### **529 Game Theory (3)**

Analysis of situations of conflict and cooperation, with economics and business applications. Introduction to cooperative and noncooperative games, including the extensive and strategic forms, Nash equilibrium, repeated games and bargaining. (Lec. 3) Pre: 528 or permission of instructor.

#### **532 Land Resource Economics**

See Community Planning 537.

#### **534 Economics of Natural Resources (4)**

Microeconomic theory applied to problems of natural resource allocation. The rationale for government intervention in the market's provision of natural resources and alternative techniques for optimally allocated natural resources are investigated. (Lec. 4) Pre: 528 or permission of instructor.

#### **535 Environmental Economics (3)**

Theory of externalities; incentive-based and regulatory policy instruments for addressing market failure; theory and methods for valuing natural resource and environmental services; other environmental topics. (Lec. 3) Pre: 528 or equivalent.

#### **540 Applied Resource Economics (3)**

Examines issues in agricultural and natural resource policy through applications of theoretical and empirical tools. Applications include pollution control, fisheries management, water, and agricultural policy. (Lec. 3) Pre: 528 or permission of instructor.

#### **542 Conservation Biology and Resource Economics**

See Natural Resources Science 532

#### **543 Economic Structure of the Fishing Industry (3)**

Analysis of fishing industries from the standpoint of activity and efficiency. Problems related to common property resources, government policy, labor, and legal and institutional factors. (Lec. 3) Pre: 514 or permission of instructor. In alternate years. Next offered fall 2002.

#### **570 Experimental Economics (3)**

Controlled laboratory experiments to study economic theories, institutions, and policies. Provides an overview of experiment design and nonparametric data analysis. Applications include game theory, markets, public goods, and uncertainty. (Lec. 3) Pre: 528 or permission of instructor.

#### **576 (or ECN 576 or STA 576) Econometrics (4)**

Application of statistics and mathematics to economic analysis. Implication of assumption required by statistical methods for testing economic hypotheses. Current econometric methods examined and discussed. (Lec. 3, Lab. 2) Pre: ECN 575 or equivalent, STA 308 or equivalent, or permission of instructor.

#### **591, 592 Special Projects (1–3 each)**

Advanced work under supervision arranged to suit the individual requirement of the student. (Independent Study) Pre: permission of chairperson.

#### **595 (or MAF 595, PSC 595, SOC 595) Problems of Modernization in Developing Nations (3)**

Selected regional problems in the environmental complex, agricultural systems, population dynamics, distribution systems, political integration, urbanization-industrialization, popular participation,

integrated theories of modernization. (Lec. 3) Pre: permission of instructors.

#### **598 Master's Nonthesis Research (1–3)**

Credit for completion of major paper. (Independent Study) Pre: enrollment in nonthesis master's program in resource economics.

#### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### **602 Research Methodology (1)**

Practice and methods of research in environmental and natural resource economics. Philosophical foundations, competing views on methodology, project design, execution and communication of results to different audiences. (Lec. 1) Pre: 528 and 576 and concurrent registration in 502. In alternate years. Next offered spring 2004.

#### **610 Advanced Studies (1–3)**

Advanced topics in resource economics. Mathematical models in resource management. (Independent Study) May be repeated with different topics.

#### **624 Dynamic Economic Models (3)**

Fundamentals of dynamic economic theory. Dynamic optimization techniques applied to environmental and natural resource economics. (Lec. 3) Pre: 528 or permission of instructor. In alternate years. Next offered spring 2003.

#### **628 (or ECN 628) Advanced Microeconomic Theory I (3)**

Neoclassical value and distribution theory. Theories of imperfect competition, general equilibrium theory, and dynamic analysis. (Lec. 3) Pre: 528 or permission of instructor. In alternate years. Next offered fall 2002.

#### **630 Advanced Microeconomic Theory II (3)**

Development and application of welfare theory to natural resource use. Welfare concepts such as consumer surplus, producer surplus, and marginal cost pricing in policy decisions for agriculture and natural resources. (Lec. 3) Pre: 628 or permission of instructor. In alternate years. Next offered spring 2003.

#### **634 Advanced Economics of Natural and Environmental Resources (4)**

Concepts of economic efficiency applied to natural resources with emphasis on intertemporal allocation of nonrenewable and renewable resources. Application of welfare and institutional economics to resource management and development; analysis of optimum allocation among users. (Lec. 4) Pre: 534 and 624 or permission of instructor. In alternate years. Next offered fall 2003.

**635 Marine Resources Policy (3)**

Analysis of public policy problems relating to estuarine and marine resources, including natural resource damage assessment, environmental issues, coastal zone concerns, and other selected topics. (Lec. 3) Pre: 534. In alternate years. Next offered spring 2004.

**676 (or ECN 676) Advanced Econometrics (4)**

A course covering the tools necessary for professional research in resource economics. Reviews the general linear model, but emphasis is on simultaneous equation models. Assumes a knowledge of introductory econometrics, statistical theory, and matrix algebra. (Lec. 4) Pre: 576 or its equivalent.

**677 Econometric Applications in Resource Economics (3)**

Special topics in econometrics as applied to agriculture and natural resources. Topics include time series models. Bayesian analysis and dichotomous dependent variables. (Lec. 3) Pre: 676. In alternate years. Next offered fall 2003.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Russian (RUS)**

Section Head: Professor Aronian

**101 Beginning Russian I (3)**

Introduction to fundamentals of grammar; exercises in speaking, reading, and writing. Emphasis on pronunciation, intonation, and aural comprehension of contemporary spoken Russian. Language laboratory required. (Lec. 3) Pre: no prior Russian is required. Will not count toward the language requirement if the student has studied Russian for more than one year within the last six years. (F)

**102 Beginning Russian II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate Russian I (3)**

Completion of fundamentals of grammar; exercises in speaking and writing, reading of contemporary texts; emphasis on distinction between spoken and written language. Language laboratory required. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate Russian II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**205, 206 Advanced Russian (3 each)**

Oral reports, written compositions, and classroom discussion based on readings in Russian history and culture, literature, and current Soviet affairs. Listening projects in laboratory. (Lec. 3) Pre: 104 or equivalent.

**325, 326 Introduction to Literary Studies in Russian (3 each)**

Techniques of literary criticism applied to Russian literary works in various genres. Listening projects in laboratory emphasizing poetry and drama. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206. In alternate years. Next offered 2003–04. (A)

**391, 392 Masterpieces of Russian Literature (3 each)**

Prose, poetry, and drama from late 18th through 20th centuries in translation. Emphasis on literary movements through textual analysis. Authors range from Pushkin to Pasternak, including Dostoevsky and Tolstoy. (Lec. 3) (A) (F)

**460, 461 The Russian Novel (3 each)**

Major developments in themes and techniques, significant shifts of mode. Influences on the emergence of the novel in Russia. Laboratory required. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206. In alternate years. Next offered 2003–04.

**497, 498 Directed Study (3 each)**

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by member and approval of section head.

**Service Learning**

*The Feinstein Center for Service Learning recognizes the following courses as having a service learning component. Service learning is an alternative way of both teaching and learning about concepts or theories. All first-year students are introduced to service learning through their required URI 101, Traditions and Transformation course. The purpose of these courses is to help students make meaningful connections between academic course work and societal issues and needs within the community. The service work is profoundly connected to and enhanced by the specific course of study. Depending on the instructor, the service learning component may be an optional or required part of the course content.*

**Community Planning (CPL)**

510 Community Planning and Community and Social Change

**Community Service (CSV)**

101 Introduction to Cultural Competence

102 Cultural Competence Experiences

301 Course-Cased Community Service

302 Community Service at URI

303 Community Service in the Community

**Education (EDC)**

424 Teaching of Reading (service is optional)

429 Emergent Literacy (service is optional)

456 Mathematics Methods in Elementary Teaching

**English Language Studies (ELS)**

200 English Language Fellows Training Course

201 Content-Based English language Studies

**Human Development and Family Studies (HDF)**

380 Field Experiences in Community Agencies

381 Field Experience Seminar

434 Children and Families in Poverty

560 Group Procedures and Leadership

562 Organization Development in Human Services

583, 584 Master's Internship

**Human Science and Services (HSS)**

140 Ways of Knowing in Human Science and Services I

141 Ways of Knowing in Human Science and Services II

530 Multidisciplinary Health Seminars for the Elderly

**Landscape Architecture (LAR)**

244 Basic Landscape Architecture Design

444 Landscape Architecture Studio III (Professor Green)

445 Landscape Architecture Studio IV

**Management (MGT)**

681 Administrative Policy and Decision Making

**Marine Affairs (MAF)**

490 Field Experience in Marine Affairs (Professor Krausse)

**Music (MUS)**

119 Introduction to the Music Profession

**Natural Resources Science (NRS)**

309 Wildlife Management Techniques Laboratory

**Nursing (NUR)**

224 Practicum in Health Promotion Nursing

324 Practicum in Health Restoration Nursing

344 Practicum in Childbearing and Reproductive Health Nursing

346 Practicum in Care of Clients and Families

424 Practicum in Nursing of Older Adults with Health Alterations

434 Practicum in Nursing of Children with Health Alterations

444 Practicum in Nursing of Vulnerable Populations

454 Theories, Issues, and Practice in Professional Nursing

532 Primary Health Care I: Practicum

534 Primary Health Care II: Practicum

590 Directed Study and Practice in Advanced Clinical Nursing

**Plant Sciences (PLS)**

390 Irrigation Technology

407 Environmental Education: Theory and Experiential Education

**Political Science (PSC)**

487 Rebuilding Our Communities: Theory and Practice

485 Children, Community, and Human Rights

**Sociology (SOC)**

402 Field Experience in Sociology

**Writing (WRT)**

301 Advanced Writing: Community Service

*In addition to the courses listed above, specific topics in other courses and some temporary courses may also carry the Service Learning designation.*

**Sociology (SOC)**

Chairperson: Professor Mederer

**100 General Sociology (3)**

Introductory description and analysis of the structure and dynamics of human society. Social norms, groups, intergroup relations, social change, stratification, and institutions. (Lec. 3) (S)

**204 Social Psychology (3)**

Examination of the social basis of self and behavior; emphasis on identity, motivation, attitude, social role, and the symbolic in social life. (Lec. 3) (S)

**212 Families in Society (3)**

Examines the role of families in maintaining and changing society. Emphasis on demographic and historical changes in family life, the diversity of family structures and connections between the family and the political economy. (Lec. 3) (S)

**214 Urban Sociology (3)**

Introduction to major theories of urbanization; examination of the social, political, and cultural aspects of urbanization and contemporary urban problems such as the population explosion, pollution, class inequality and alienation; emphasis on a global and comparative cross-national perspective. (Lec. 3) (S)

**216 Deviant Behavior (3)**

Examination and analysis of major theories of deviant behavior. Application of these theories to particular types of deviant behavior. (Lec. 3) (S)

**224 Health, Illness, and Medical Care (3)**

Introduction to social factors in the occurrence, distribution, and treatment of illness in society; critical analysis of the social organization of medicine in contemporary American society. (Lec. 3) (S)

**230 Crime and Delinquency (3)**

Survey of the extent, distribution, trends and costs of delinquency and crime in the United States; examination of selected types of crime and delinquency; policy implications. (Lec. 3) (S)

**238 Population Problems (3)**

Problems in the growth, decline, and composition of populations. Effects of fertility, mortality, migration. Special attention to American society. (Lec. 3) (S)

**240 Race and Ethnic Relations (3)**

Relations among the various ethnic, religious, racial, and political minorities and majorities, with

special reference to the United States. (Lec. 3) (S) Professor Cunnigen's section is writing intensive [WI]

**242 Sex and Gender (3)**

Current research exploring issues of sex and gender. Socialization, gender role playing, and personal relationships. Institutional costs of sexism. Prospects for human liberation. (Lec. 3) (S)

**274 Criminal Justice System**

See Political Science 274.

**300 Topics in Sociology (1-3)**

Critical study of selected topics. Subject will vary according to the expertise and availability of instructors. (Lec. 1-3) Pre: one 100- or 200-level sociology course. May be repeated for credit with different topic.

**301 Sociological Research Methods (3)**

Scientific method in sociological research; emphasis on the development of the ability to construct and evaluate data-based arguments; topics include the nature of evidence, research design, principles and techniques of sampling, data collection and interpretation. (Lec. 3) Pre: 100.

**302 Topics in Sociological Research (3)**

An extension of 301 in which students apply principles and techniques in an original research experience. Recommended for students planning to attend graduate or professional school. (Lec. 3) Pre: 301 and permission of the instructor.

**306 Development of Human Societies (3)**

Examines social change from an historical perspective in which whole societies are the unit of analysis. Focuses on the role of technology, political economy and globalization. (Lec. 3) Pre: 100 or 214.(S)

**318 Social Movements and Social Change (3)**

Analysis of theoretical perspectives, directions, patterns, and consequences of social change in relationship to social movements. Case studies of social movements with special emphasis on the civil rights movement. (Lec. 3) Pre: 6 credits in sociology.

**320 Formal Organizations (3)**

Development, description, and analysis of types of formal organizations, from small-scale systems to modern large bureaucratic organizations, postbureaucratic forms such as open, egalitarian systems, and adhocracies. (Lec. 3) Pre: one 100- or 200-level sociology course.

**322 The Arts and Social Order (3)**

Consideration of the relationship between the arts and socially established meanings, social structure, and societal myths, with special attention to consonant and dissonant functions of the arts for social cohesion. (Lec. 3) Pre: 6 credits in sociology or permission of instructor.

**326 Madness and Society (3)**

Phenomenon of mental disorder considered in light of recent research findings and developments in sociological theory. Mental disorder discussed as an outgrowth of societal processes. (Lec. 3) Pre: 6 credits in sociology or permission of instructor.

**331 Punishment and Corrections (3)**

An overview and analysis of societal reactions to crime with emphasis on American society. Purposes of criminal sanctions, probation and parole, jails and prisons, capital punishment and its effect. (Lec. 3) Pre: one 100- or 200-level sociology course.

**336 Social Inequality (3)**

Dimensions and dynamics of inequality in society; concepts of class and status; processes of social mobility. (Lec. 3) Pre: one 100- or 200-level sociology course. (S) Professor Cunnigen's section is writing intensive [WI]

**350 Work and Family Life (3)**

Linkages between economic and family institutions. Effects of work on family and of family on work. Historical development of the linkages. Contemporary effects due to men's decreasing and women's increasing labor force participation. (Lec. 3) Pre: 100 or 212 or HDF 230.

**370 Theories of Crime and Delinquency (3)**

Historical development of criminological theory; examination of the major sociological and social psychological theories of crime, criminality and delinquency; evaluation of competing theories. (Lec. 3)

**401 History of Sociological Thought (3)**

Examination of the basic questions and issues that have been the focus of sociological thought; critical analysis of theoretical sociology with an emphasis on the contributions of sociological theory to understanding the structures and problems of modern society. (Lec. 3) Pre: 100 and 6 credits in sociology.

**408 Individual Life and Social Order (3)**

Sociology of the individual as a creative participant in social order. Emphasis on cultural symbolism in the development of personal idiom, social structure, and social change. (Lec. 3) Pre: 9 credits in sociology or permission of instructor.

**413 Gender Inequality (3)**

Development of gender inequality. Critique of various theories explaining inequality. Sociological interpretation of theories of gender. (Seminar) Pre: 242 or permission of instructor. In alternate years.

**420 Family Violence (3)**

Examination and analysis of the incidence, types, and causes of violence between family members, including child abuse, wife abuse, and abuse of the elderly. (Seminar) Pre: 100 or 102 or permission of instructor.

**426 (or PSC 426) Issues in Corrections (3)**

Justifications for punishment and corrections; historical development; intensive survey of current research on deterrence, effectiveness of treatment, prison, violence, and other issues. (Seminar) Pre: 331. In alternate years.

**428 Institutional Racism (3)**

Consideration of varying models of race and ethnic relations; examination of recent research on issues such as residential segregation, school desegregation, affirmative action, and racial disorders; comparisons of United States with other societies. (Seminar) Pre: one 300-level sociology course or permission of instructor. In alternate years.

**430 (or PSY 430) Intimate Relationships (3)**

Examination of the effects of cultural, social, and psychological processes in the development, maintenance, and dissolution of intimate relationships. Emphasis on friendship patterns, dating and marital relationships, intimacy in nontraditional relationships. Emphasis on research. (Lec. 3) Pre: any 100- or 200-level course in sociology or PSY 113 and permission of instructor. Not for graduate credit.

**432 (or LRS 432) Industrial Sociology (3)**

The social structure of industrial organizations; institutional patterns of conflict and cooperation; the impact of the political process; current issues in industry. (Lec. 3) Pre: 100 or permission of instructor.

**437 Law and Families in the United States**

See Human Development and Family Studies 437.

**438 Aging in Society (3)**

Analysis of the use of age in assigning roles, age changes over the life course and the implications of demographic changes for societies. Emphasis upon theories of aging, the status and power of the aged and relations between age groups. (Lec. 3) Pre: one 300-level course in sociology or permission of instructor.

**444 The Sociology of Religion (3)**

Sociological theory and research in the analysis of interrelationships among religious culture, secular culture, the social structure of religious groups, and general social structure. (Lec. 3) Pre: one 100- or 200-level sociology course.

**446 Sociology of Knowledge (3)**

Theories and research on the social bases of ideas. Emphasis on the works of Durkheim, Mannheim, and Marx and their influences on "common sense" interpretations of social life. (Seminar) Pre: one 100- or 200-level sociology course.

**452 Class and Power (3)**

Class structures and patterns of power in advanced societies; comparisons of inequality in capitalist

and socialist societies; theories of the relation between class and power; class consciousness, conflict, and accommodation. (Lec. 3) Pre: 336 or permission of instructor. In alternate years.

**476 (or PSC 476) Policy Issues in Criminal Justice (3)**

Examination of current and proposed criminal justice policies in light of social science theory and research, including capital punishment, community policing, gun control, intermediate sanctions, legalization of drugs, mandatory sentencing, privatization of prisons, restorative justice. (Seminar) Pre: 274 (or PSC 274).

**495 Senior Seminar in Sociology (3)**

Critical examination of selected topics in sociology. Particular topics for examination will be selected by the course instructor. Required for students in the B.A. program in sociology. (Seminar) Pre: senior standing; open only to sociology majors. Not for graduate credit.

**497 Field Experience in Sociology (3-6)**

Field experience in an approved government agency or non-profit organization; practice in applying sociological concepts and methods to the analysis of problems faced by the agency and/or its clients, exploration of career opportunities. (Practicum) Junior or senior standing and 6 credits in sociology beyond 100. May be taken for 3 or 6 credits. A maximum of six credits may be earned. Not for graduate credit

**498, 499 Independent Study (3 each)**

Areas of special research not covered in other courses. May be taken as honors courses. (Independent Study) Pre: one 300-level sociology course and permission of instructor.

**505 Public Program Evaluation**

See Political Science 505.

**Spanish (SPA)**

*Section Head: Professor Gittlitz*

**101 Beginning Spanish I (3)**

Introduction to Spanish for beginners. (Lec. 3) Pre: no prior Spanish is required. Will not count toward the language requirement if the student has studied Spanish for more than one year within the last six years. (F)

**102 Beginning Spanish II (3)**

Continuation of 101. (Lec. 3) Pre: 101 or equivalent. (F)

**103 Intermediate Spanish I (3)**

Reading and discussion of representative authors, grammar review, and continued practice in language skills to broaden understanding of Hispanic culture. (Lec. 3) Pre: 102 or equivalent. (F)

**104 Intermediate Spanish II (3)**

Continuation of 103. (Lec. 3) Pre: 103 or equivalent. (F)

**201 Oral Expression in Spanish (3)**

Development of oral skills in Spanish through discussion, interpreting, and reports on topics of personal, practical, or cultural interest. (Lec. 3) Pre: 104.

**205 Spanish Language and Style I (3)**

Development and refinement of all Spanish language skills, with emphasis on writing, through structured practice using Hispanic cultural and literary materials. (Lec. 3) Pre: 104 or equivalent.

**206 Spanish Language and Style II (3)**

Continuation of 205. (Lec. 3) Pre: 205 or equivalent.

**305 Early Spanish-American Literature and Culture (3)**

Study of the early development of Spanish-American culture through its literature, from Conquest to Independence. (Lec. 3) Pre: 206 or permission of instructor.

**306 Modern Spanish-American Literature and Culture (3)**

Significant figures and developments in literature, the arts, and society, from Independence to the present. (Lec. 3) Pre: 206 or permission of instructor. (A)

**307 Hispanic Culture Through the 17th Century (3)**

Significant contributions in literature and the arts, from the unique period of coexistence of Christians, Jews, and Muslims through the Golden Age of the 16th and 17th centuries. (Lec. 3) Pre: 206. (A)

**308 Literature and Culture of Modern Spain (3)**

Major figures and developments in Spanish literature, the arts, and society from the 18th century to the present. (Lec. 3) Pre: 206 or permission of instructor. (A)

**310 Field Workshop (1-6)**

Cultural visit to Spain or Hispanic America. Significant monuments and places of interest to the student of literature and civilization will be studied. Lectures supplemented by assigned readings. (Workshop) Pre: 104 or permission of instructor.

**312 Advanced Spanish (3)**

Problematic aspects of Spanish grammar; proper syntax and word usage in speaking, translation, and writing at sophisticated levels; correct reproduction of sounds and intonation patterns. (Lec. 3) Pre: 206 or permission of instructor.

**315 Practicum in Community Work (3)**

Practical application of Spanish in a community agency, school, or business. Individual project de-



veloped by student under guidance of a Spanish faculty member. Requires a minimum of 120 hours. (Practicum) Pre: 206 and permission of instructor.

### **316, 317 Spanish Internship Abroad (3–6)**

Supervised work experience in Spanish-speaking country for advanced language students. (Independent Study) Pre: 321. For credit for the B.A. in Spanish only for students also completing a B.S. in engineering.

### **321 Spanish for Business and Technology (3)**

Study of the concepts and terminology of the Spanish language common to the realm of international business and engineering. (Lec. 3) Pre: 206 or equivalent. For credit for the B.A. in Spanish only for students also completing a B.S. in engineering.

### **325 Introduction to Literary Genres (3)**

Presentation of the novel, poetry, drama, and essay as literary genres. Textual commentary and methods of criticism. (Lec. 3) Pre: 206 or permission of instructor. Required for Spanish majors. (A)

### **391, 392 Spanish Literature in Translation (3 each)**

Reading and analysis in English of Spain's most significant contributions to world literature: poetry, novel, drama, essay. Works through the seventeenth century in the first semester; those of the nineteenth and twentieth in the second. (Lec. 3) Not for major credit in Spanish. (A) (F) for 391; (A) for 392.

### **393 Modern Hispanic-American Literature in Translation (3)**

Introduction to the development of Latin-American literature in the 20th century and an examination of how the literary artifact has reflected the major social and political changes of the region. (Lec. 3) Not for major credit in Spanish. (A) (F)

### **401 Oral and Dramatic Presentation of Hispanic Literature (3)**

Practice in effective oral communication in Spanish and appreciation of Hispanic literature through analysis and class presentation of drama, poetry, and prose. (Lec. 3) Pre: 325 or permission of instructor.

### **421 Business Spanish (3)**

Study of concepts and terminology in the Spanish-speaking business world. (Lec. 3) Pre: credit or concurrent enrollment in a 300-level Spanish course. Not for graduate credit in Spanish.

### **430 Castilian Prose of the 16th and 17th Centuries (3)**

Literary significance of the Renaissance and Baroque periods and an analysis and critical examination of the prose works of the principal writers of this Golden Age of Castilian Literature. (Lec. 3) Pre: 325 or permission of instructor.

### **431 Drama and Poetry of the 16th and 17th Centuries (3)**

Spanish poetry and drama from the early Renaissance through the Baroque. (Lec. 3) Pre: 325 or permission of instructor.

### **450 Romanticism and Realism (3)**

Nineteenth-century Spanish literature of the romantic and realist movements. Examples of drama, poetry, and prose as they reflect evolving concerns of the modern writer and society. (Lec. 3) Pre: 325 or permission of instructor.

### **470 Topics in Hispanic Literature (3)**

Special topics or authors not emphasized in other courses. (Seminar) Pre: 325 or permission of instructor.

### **481 Don Quijote (3)**

Life and times of Miguel de Cervantes Saavedra and the reading and critical interpretation of his work. *El ingenioso hidalgo Don Quijote de la Mancha*. (Lec. 3) Pre: 325 or permission of instructor.

### **485 Modern Spanish Narrative (3)**

Representative narrative works by Spain's major authors from the Generation of 1898 to the present. (Lec. 3) Pre: 325 or permission of instructor.

### **486 Modern Spanish Poetry and Drama (3)**

Selected poetry and plays from the 19th century through the present. (Lec. 3) Pre: 325 or permission of instructor.

### **488 Spanish-American Poetry and Drama (3)**

Traces the development of poetic expression and drama from the 17th century to modern times as a reflection of the evolution of Spanish-American identity. (Lec. 3) Pre: 325 or permission of instructor.

### **489 The Spanish-American Narrative (3)**

Traces the development of fictional prose in Spanish America from the colonial period to modern times as a reflection of cultural and societal changes. (Lec. 3) Pre: 325 or permission of instructor.

### **497, 498 Directed Study (1–3 each)**

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: 325, acceptance of project by member, and approval of section head.

### **510 Contemporary Spanish Workshop (3–6)**

New developments in all areas of Hispanic studies including pedagogical matters and classroom techniques. (Workshop) Pre: graduate standing or permission of instructor.

### **511 The Spanish of the Americas (3)**

Examines linguistic dialect variation within Spanish and the factors that determine it. Individual and

social bilingualism and its educational implications are also discussed. (Seminar) Pre: graduate standing or permission of instructor.

### **561 Seminar in Medieval Poetry and Prose (3)**

Examination and analysis of the epic, lyrical, and narrative medieval literature of Spain and its impact on subsequent literature. (Seminar) Pre: graduate standing or permission of instructor.

### **570 Topics in Hispanic Literature and Culture (3)**

Special topics or authors not emphasized in other courses. (Seminar) Pre: graduate standing or permission of instructor.

### **572 Evolution of Spanish-American Culture and Thought (3)**

Development of Spanish-American thought and cultural trends, as portrayed in major works of artists and thinkers. (Lec. 3) Pre: graduate standing or permission of instructor.

### **574 Interpretations of Modern Spanish-American Thought (3)**

Topics of interest in the development of modern Spanish-American thought as represented in the essay from the period of independence to the present. (Seminar) Pre: graduate standing or permission of instructor.

### **580 Seminar in Nineteenth-Century Spanish Literature (3)**

Selected authors and topics from the Spanish Romantic movement through realism and naturalism. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

### **584 Interpretations of Modern Spain (3)**

Development of Spanish thought particularly with respect to sociological and cultural problems from the 18th century to the contemporary period as seen through the writings of significant essayists. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years.

### **585 Seminar in 20th-Century Spanish Literature (3)**

Topics of aesthetic, cultural, and linguistic concern in 20th-century peninsular literature. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

### **587 Seminar in Renaissance and Baroque Literature (3)**

Aesthetic analysis of works representative of the period and their influence on subsequent literatures. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

**588 Seminar in Colonial Spanish-American Literature and Culture (3)**

Topics of interest dealing with the development of Spanish-American cultural identity and literature from the period of discovery and colonization to independence. (Seminar) Pre: graduate standing or permission of instructor.

**589 Seminar in Modern Spanish-American Literature and Culture (3)**

Topics of interest dealing with the development of Spanish-American literature and culture from the period of independence to the present. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic.

**590 The Hispanic Presence in the United States (3)**

A study of the establishment of the Hispanic presence and its heritage in the art, folklore, and language of the United States, and an analysis of the literature of the Spanish-speaking peoples. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years.

**597, 598 Directed Study (3 each)**

Individual research and reports on problems of special interest. (Independent Study) Pre: graduate standing and approval of the director of graduate studies. May be repeated with different topic.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Statistics (STA)**

*Section Head:* Professor Hanumara

**220 Statistics in Modern Society (3)**

Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. (Lec. 2, Rec. 1) (M)

**307 Introductory Biostatistics (3)**

Statistical methods applicable to health sciences. Data presentation. Vital statistics and life tables. Fitting models to health data. Testing, estimation, analysis of cross-classifications, regression, correlation. (Lec. 2, Rec. 1) Pre: MTH 107 or 108. Not open to students with credit in 308 or 409.

**308 Introductory Statistics (3)**

Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression, and correlation. (Lec. 2, Rec. 1) Pre: MTH 107 or 108. Not open to students with credit in 307 or 409.

**409 Statistical Methods in Research I (3)**

Same as 308 but is for students who have better mathematical preparation. (Lec. 3) Pre: MTH 131 or 141. Not open to students with credit in 307 or 308.

**411 (or PHP 411 or APS 411) Biostatistics II (3)**

An overview of statistical methods used in performing research in pharmacotherapeutics and pharmacoepidemiology. Emphasis will be on understanding both common study designs and the output from statistical analysis of data obtained from these studies. (Lec. 3) Pre: an introductory statistics course (i.e., 307) or permission of instructor.

**412 Statistical Methods in Research II (3)**

Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some non-parametric methods. (Lec. 3) Pre: 307 or 308 or 409.

**413 Spatial Data Analysis (3)**

Analysis of point patterns: visualizing, exploring and modeling, space time clustering, correcting for spatial variation, clustering around a specific point source. Analysis of spatially continuous data: variogram analysis and Kriging methods. (Lec. 3) Pre: An introductory statistics course such as 307 or 308 or 409.

**491 Directed Study in Statistics (1-3)**

Advanced work in statistics. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**492 Special Topics in Statistics (3)**

Advanced topics of current interest in statistics. (Lec. 3) Pre: permission of chairperson.

**500 Nonparametric Statistical Methods (3)**

Rank and sign tests, permutation tests and randomization, run test, tests of goodness of fit, order statistics, estimation, and comparison with parametric procedures. Examples illustrating the applications of nonparametric techniques. (Lec. 3) Pre: 409.

**501 Analysis of Variance and Variance Components (3)**

Analysis of variance and covariance, experimental design models, factorial experiments, random and mixed models, estimation of variance components, unbalanced data. (Lec. 3) Pre: 412.

**502 Applied Regression Analysis (3)**

Topics in regression analysis including subset selection, biased estimation, ridge regression, and nonlinear estimation. (Lec. 3) Pre: 412.

**513 Statistical Quality Assurance**

See Industrial and Manufacturing Engineering 513.

**517 Small N Designs**

See Psychology 517.

**520 Fundamentals of Sampling and Applications (3)**

Simple random sampling; properties of estimates, confidence limits. Sample size. Stratified random sampling; optimum allocation, effects of errors, and quota sampling. Regression and ratio estimates; systematic and multistage sampling. (Lec. 3) Pre: 308 or 409.

**532 (or ASP 532 or PSY 532) Experimental Design (3)**

Application of statistical methods to biological and psychological research and experimentation. Experimental situations for which various ANOVA and ANCOVA designs are most suitable. (Lec. 3) Pre: 409 or equivalent.

**535 Statistical Methodology in Clinical Trials (3)**

Bioavailability, dose response models, crossover and parallel designs, group sequential designs, survival analysis, meta analysis. (Lec. 3) Pre: 409, 411, or 412 or permission of instructor.

**541 Multivariate Statistical Methods (3)**

Review of matrix analysis. Multivariate normal distribution. Tests of hypotheses on means, Hotelling's  $T^2$ , discriminate functions. Multivariate regression analysis. Canonical correlations. Principal components. Factor analysis. (Lec. 3) Pre: 412.

**542 Categorical Data Analysis Methods (3)**

Analysis of multidimensional categorical data by use of log-linear and logit models. Discussion of methods to estimate and select models followed by examples from several areas. (Lec. 3) Pre: 412.

**550 Ecological Statistics (3)**

Application of statistical methodology to the following topics: population growth, interactions of populations, sampling and modeling of ecological populations, spatial patterns, species abundance relations, and ecological diversity and measurement. (Lec. 3) Pre: 409 or permission of instructor.

**576 Econometrics**

See Resource Economics 576.

**584 Pattern Recognition**

See Electrical Engineering 584.

**591 Directed Study in Statistics (1-3)**

Advanced work in experimental statistics conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**592 Special Topics in Statistics (3)**

Advanced topics of current interest in experimental statistics. (Lec. 3) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**610 Parsimony Methods**

See Psychology 610.

**612 Structural Modeling**

See Psychology 612.

*In addition to statistics courses offered by the Department of Computer Science and Statistics under the STA code, there are a number of statistics-oriented courses offered by other departments:*

**Business Analysis and Computing**

201, 202 Managerial Statistics I and II

**Education**

555 Quantitative Thinking and Applications for Education

**Industrial and Manufacturing Engineering**

411 Probability and Statistics for Engineers

412 Statistical Methods for Engineers

533 Advanced Statistical Methods for Research and Industry

634 Design and Analysis of Industrial Experiments

**Management Science**

450 Forecasting

455 Analysis of Managerial Data

601 Business Research Methods: Linear Models

602 Business Research Methods: Multivariate Analysis

630 Management Statistics with SAS and Personal Computer Software

675 Applied Time Series Methods and Business Forecasting

**Mathematics**

451 Introduction to Probability and Statistics

452 Mathematical Statistics

550 Probability and Stochastic Processes

551 Mathematical Statistics

**Masters of Business Administration**

500 Statistical Methods for Management

**Education**

555 Quantitative Thinking and Applications for Education

**Psychology**

300 Quantitative Methods in Psychology

533 Advanced Quantitative Methods in Psychology

## Textiles, Fashion Merchandising, and Design (TMD)

*Chairperson:* Professor Bide

**103 Textile Products (3)**

Product knowledge in design, manufacturing, and merchandising within the textile complex. Emphasis on domestic and international issues. Survey of careers in business, industry, government and research. (Lec. 3)

**113 Color Science (3)**

The science of color: light and its interaction with objects and color vision. Color explained, mixed, measured, described, and reproduced (paints, dyes, photography, TV). Color in the natural world. (Lec. 3) (N)

**222 Apparel Production (3)**

Analysis of apparel construction and production; current industrial and technological developments. Discussion of sizing and quality standards with emphasis on identification of fabrics, garment styles, findings, and trims. (Lec. 3) Pre: 103.

**224 Clothing and Human Behavior (3)**

Clothing and appearance as a form of human behavior. Analysis of social, psychological, and cultural factors in personal appearance and as a system of communication. Focus on cross-cultural and international perspectives. (Lec. 3) (S)

**226 Interior Design I (3)**

Physical, social, psychological, economic and aesthetic aspects required of interiors for single and multiple dwellings; interactive functions of residential and commercial spaces; elements and principles of design. (Lec. 3)

**232 Fashion Retailing (3)**

A comprehensive study of fashion retailing as an operating system. Examination of the strategies and the organizational structure which support the fashion retail system. (Lec. 3)

**240 Development of Contemporary Fashion (3)**

History of contemporary fashion from the beginning of the 20th century to the present. Influence of designers, buyers, consumers, and technology on fashion in the marketplace. (Lec. 3) Pre: 103 and sophomore standing.

**303 Textile Science (3)**

Current textiles and textile products. Scientific aspects of fibers, yarns, fabrication, and finishes for apparel and home furnishings. Study of existing regulatory controls and policies as they affect the consumer. (Lec. 3) Pre: 103 and CHM 124 or permission of instructor.

**313 Textile Science Laboratory (1)**

Laboratory exercises include fiber identification, fabric analysis, and fabric performance testing. A written project and oral presentation on fabric performance are required. Students furnish their own fabric for performance testing. (Lab. 2) Pre: 103, CHM 124, 126, and concurrent enrollment in 303.

**325 Apparel I (4)**

Principles of garment production as related to construction, fit, performance, quality, and cost. Construction techniques, sizing, material evaluation and assembly management. Quality analysis and introduction to computer-aided design. (Lec. 2, Lab. 4)

**326 Interior Design II (3)**

Application and implementation of design concepts to interior spaces; elevations, sections, materials selection, isometrics and perspectives, presentation boards. Introduction to computer-aided design (Lec. 2, Lab. 2) Pre: ART 101, 103 or 207 and TMD 103, 226.

**327 Apparel Design (3)**

Design principles as applied to contemporary clothing with emphasis on various age groups and special populations. Laboratory experiences concentrate on the creative process and development of illustrative techniques. (Lec. 2, Lab. 2) Pre: ART 101, 103 or 207 and TMD 222 or 325.

**332 Fashion Merchandise Buying (3)**

The theory of fashion merchandising and its application to basic retailing procedures, the responsibility of the buyer, and procedures used to determine consumer demand, merchandise selection, and pricing. (Lec. 3) Pre: 103, 224, and 232.

**335 Apparel II (4)**

Application of flat pattern design and draping techniques. Special emphasis on computer-aided design application as related to sizing, sloper development, and pattern drafting. Creative laboratory processes from design to finished product. (Lec. 2, Lab. 4) Pre: 325 or permission of instructor.

**340 Historic Costume (3)**

Sociological, economic, religious, and political factors affecting the history of costume and resulting fashion changes from antiquity to the early 20th century. Use of department's historic costume collection. (Lec. 3)

**342 Fashion Study Tour (1)**

Students spend two weeks overseas during intersession studying the apparel and/or interior furnishings market in London and Paris. Lectures and tours by designers, manufacturers, and retailers. Students may register once in apparel and once in interior furnishings. Travel costs are extra. (Practicum) Pre: junior standing or permission of instructor.

**358 Weaving (3)**

Introduction to hand weaving including on-loom and off-loom techniques. Designing, drafting, warping, and finishing of various types of weaves. Students complete samplers and projects. (Lec. 1, Lab. 4)

**361, 362 Special Problems (1-4 each)**

Open to qualified juniors and seniors who wish to do advanced work. (Independent Study) Pre: approval of application by instructor and chairperson. May be repeated for a maximum of 6 credits.

**402 Seminar in Textiles and Clothing (1-2)**

Recent developments in manufacturing, marketing, and retailing of textile products. Discussion of fash-

ion issues and impact on consumer. Lectures by speakers from business, industry, and government. (Lec. 1–2) Pre: junior or senior standing or permission of instructor. May be repeated once

#### **403 Textile Performance (3)**

Analysis of textiles using test methods and standards adopted by government, industry, and buyers to insure consumer satisfaction. Interpretation of test data in relation to consumer expectations and performance claims. (Lec. 2, Lab. 2) Pre: 103 and 303 or permission of instructor.

#### **413 Dyeing and Finishing of Textiles (3)**

Study of chemical and physical interactions of dyes and finishes with textile fiber/fabric systems. Evaluation of application techniques. Detection and evaluation of problems resulting from dyeing and finishing. (Lec. 2, Lab. 2) Pre: 303 or permission of instructor.

#### **422 Fashion Retailing Seminar (1)**

Seminar concerning the retailing of textile, apparel, and other fashion products. Concurrent registration in 461 or 462 required. (Seminar) Pre: 303, 332 and permission of instructor. Not for graduate credit.

#### **424 Fashion Theory and Analysis (3)**

Principles, theories, and recent investigations of the fashion process are presented to develop analytical skills for evaluating consumer behavior, as related to clothing and adornment. Application to contemporary trends. (Lec. 3) Pre: senior or graduate standing.

#### **426 Historic and Contemporary Furniture (3)**

Review of major historical styles of furniture and their influence on contemporary furniture design. Materials, styles, and construction of contemporary furniture. In-depth study of upholstery fabrics. (Lec. 3) Pre: 103, 226.

#### **432 Fashion Merchandising Operations Control (3)**

Analysis of determinants of fashion merchandising profitability below gross margin; expense analysis, classification, allocating expense center accounting, and key operating ratios. Emphasis upon modification and control of selling cost ratios. (Lec. 3) Pre: 232 and 332.

#### **433 Textile Markets (3)**

Study of social, economic, and political issues that affect the development, production, and marketing of textile products. Study of the textile needs of the apparel, home furnishings, industrial, and medical industries. (Lec. 3) Pre: 303 and ECN 201 and 202.

#### **440 Historic Textiles (3)**

Chronological study of textiles, emphasizing socio-economic, religious, and political influences. Contribution of designers, inventors, trade groups, and

industrialists. (Lec. 3) Pre: 103 or permission of chairperson.

#### **442 Fashion Promotion (3)**

Emphasis on understanding and applying the principles of fashion retailing communication. Evaluation and application of effective promotional activities such as visual merchandising and fashion shows to trade and retail levels of fashion merchandising. (Lec. 3) Pre: 232 and 332 or permission of instructor.

#### **452 Consumer Behavior in Fashion Retailing (3)**

Use by fashion retailing management of explanatory and predictive models of consumer behavior relating to fashion merchandising in establishing retail policy and strategy. (Lec. 3) Pre: 232 and 332 or permission of instructor.

#### **461, 462 Internship (1–6)**

Structured internship in textiles, apparel, or interior design supervised by a faculty advisor. Juniors and seniors work in business, industry, or other agencies under supervision of qualified personnel. (Minimum of 45 hours per semester per credit) May be repeated for a maximum of 12 credits. Pre: completion of 60 credit hours, minimum GPA of 2.00, and permission of instructor and chairperson. Not for graduate credit.

#### **500 Ethnic Costume and Textiles (3)**

Survey of regional styles of costume and textiles from all areas of the world, excluding fashionable dress. Influence of social, economic, technological, and aesthetic factors. (Lec. 3) Pre: 224 or equivalent, 340, 440, or permission of instructor. In alternate years.

#### **503 Topics in Textile Science (3)**

Advanced study in a particular area of textile science. One topic will be studied from a list that includes dyeing, finishing, printing, polymer and fiber chemistry, dyestuff chemistry, and color science. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. May be repeated up to three times with different topics.

#### **510 Research Methods in Textiles (3)**

Application of research methodology to the study of textiles and clothing. Approach is multidisciplinary in that experimental, social science, and historic methods are covered. (Lec. 3) Pre: graduate standing or permission of instructor.

#### **513 Detergency (3)**

Study of chemical and mechanical interactions of textile fibers, fabrics, laundering products, equipment, and soils. Laboratory experience in evaluation of laundry products and fabric durability during laundering. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. In alternate years.

#### **520 Introduction to Textile Conservation (3)**

Survey of methods used to clean, repair, store, and display historic textiles and costumes. Laboratory experience in conservation practices. (Lec. 2, Lab. 2) Pre: a textile science course and historic textiles or costume course, or permission of instructor.

#### **521 Topics in Textile Conservation (1–3)**

Investigation of textile conservation theory and methodology. Some topics will include laboratory assignments. (Lec. 1–3) Pre: 520 or experience in textile conservation, and permission of instructor. May be repeated with different topic.

#### **522 Special Problems in Textile Conservation (1–3)**

Supervised independent studies on specific textile conservation projects or research. (Independent Study) Pre: 520 or experience in textile conservation, and permission of instructor. May be repeated for a maximum of 6 credits.

#### **524 Cultural Aspects of Dress (3)**

Seminar in social, psychological, and cultural aspects of dress. Symbolic interaction and other dress-relevant theories concerning individual motivation and group interaction. (Seminar) Pre: 224 or permission of instructor.

#### **530 Historic Textile Internship (2–4)**

Supervised internship designed to introduce the student to management of textile and costume collections in a museum or historical society setting. Individually designed to suit student needs: conservation, education, and research. (Practicum) Pre: 510, 520, graduate standing in textiles, fashion merchandising, and design, or permission of chairperson.

#### **540 Special Problems in Textiles and Clothing (3)**

Supervised independent study in specific areas of textiles and clothing. (Independent Study) Pre: permission of chairperson. May be repeated once.

#### **570 Topics in Historic Textiles or Costume (3)**

Advanced study in a particular area of historic textiles or costume using artifactual and documentary primary sources. Use of historic textile and costume collection. (Lec. 3) Pre: 340, 440 or equivalent. May be repeated for a maximum of six credits.

#### **599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Theatre (THE)

*Chairperson:* Associate Professor McGlasson

*Courses in theatre offer theory, production, design, and performance training in various areas of dramatic arts, and many are open to nonmajors. The Theatre Department conducts open auditions and makes performance and production work available to all members of the URI community.*

### 100 Introduction to Theatre (3)

Designed to provide students with a theoretical and practical understanding of the theatrical process as well as to develop critical standards and increase the enjoyment of theatre as an art. (Lec. 2, Lab. 4) Not open to theatre majors. (A)

### 111 Introduction to Acting (3)

Designed to initiate students to theatre as a collaborative art through systematic exposure to the principles and techniques of acting, directing, stage design, stagecraft, and playwriting. (Studio 6)

### 117 Introduction to Voice and Movement (3)

An exploration of the body and voice as instruments with emphasis on the development of physical and vocal awareness, concentration, maintenance, and endurance. (Studio 6)

### 161 Introduction to Stagecraft (3)

Stage carpentry, rigging, properties, scene painting, and lighting mechanics with practical experience working on productions. (Lec. 2, Lab. 2)

### 181 Script Analysis (3)

Analysis of plays from varying perspectives of the actor, director, and designer. Course emphasizes theatre terminology and develops a working vocabulary. (Lec. 3) (A)

### 211, 212 Basic Acting I, II (3 each)

Introduction to the theory and basic techniques of acting. Includes moment-to-moment improvisation, the reality of doing, fantasy work, and voice and movement. (Studio 6) Pre for 211: 111, 117, or permission of instructor; concurrent enrollment in 213. 212: Continuation of 211. Pre: 211 and permission of instructor; concurrent enrollment in 214.

### 213 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 211. (Studio 2) Pre: concurrent enrollment in 211.

### 214 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 212. (Studio 2) Pre: concurrent enrollment in 212.

### 217 The Role of Music in Theatre (3)

Perspectives on music and its relationship and application to the theatre for theatre students. Musical vocabulary, performance techniques, and conventions related to the theatre. Emphasis on relationship of music and musical performance to all aspects of theatrical production. (Studio 6) Pre: permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor.

### 221 Stage Management (3)

Theoretical and practical study of the basic methods and procedures of the production with emphasis on the director-stage manager relationship and the role of each. Participation in productions required. (Lec. 2, Lab. 2)

### 227 Dance for Musical Theatre (3)

Orientation and instruction in beginning dance for the musical stage. Dance vocabulary in jazz, ballet, tap; performance techniques and conventions related to the American musical. (Studio 6) Pre: theatre major or permission of instructor. May be repeated once with permission of instructor.

### 250 Costume Laboratory (3)

Practical experience in the principles of costuming including drafting theatrical patterns, construction and finishing techniques, and experience working on a theatrical production. (Lec. 1, Lab. 4)

### 261 Introduction to Theatre Design (3)

Introduction to theatre production design with emphasis on development of capabilities for expression in conceptual and graphic terms. Projects in stage scenery, costumes, and lighting. (Lec. 2, Lab. 2)

### 291 Production Laboratory (1)

Orientation and instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions. (Independent Study) May be repeated for credit.

### 300 Individual Problems in Theatre Studies (1–3)

Individual theatre work on an approved project under supervision of a member. (Independent Study) Pre: permission of. May be repeated for a maximum of 6 credits.

### 301 Special Group Studies (1–3)

Group theatre work in approved production projects under supervision of a member. (Independent Study) Pre: permission of. May be repeated for a maximum of 6 credits.

### 311, 312 Intermediate Acting I, II (3 each)

311: Continuation of Basic Acting with emphasis on approaches to characterization through improvisation and through the analysis and performance of assigned scenes. (Studio 6) Pre: 211, 212, and permission of instructor; concurrent enrollment in

313. 312: Continuation of 311. (Studio 6) Pre: 311 and permission of instructor; concurrent enrollment in 314.

### 313 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 311. (Studio 2) Pre: concurrent enrollment in 311.

### 314 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 312. (Studio 2) Pre: concurrent enrollment in 312.

### 321 Orientation to Play Direction (3)

Director's role in the process of theatre production. Emphasis on development of production concepts and rehearsal techniques. (Lec. 2, Lab. 2)

### 322 Play Direction (3)

Practical course in play direction. Class functions as a production unit and mounts a season of one-act plays. (Practicum: minimum of 6 hours per week) Pre: 321 and permission of instructor.

### 331 Playwriting (3)

Analysis and evaluation of written material supplemented by play readings and workshop tryouts of students' plays. (Lec. 2, Lab. 2)

### 341 Theatre Management (3)

Principles, terminology, and practical technique of theatre administration. Emphasis on stage management. Assignments will be made to departmental productions. (Lec. 2, Lab. 2)

### 350 Makeup (1)

Principles and techniques of stage makeup. Practical experience in application through a number of projects in developing character makeups with chiaroscuro, prosthetics, and facial hair. (Studio 2)

### 351, 352 Principles and Theories of Theatrical Costuming I, II (3 each)

351: Analytical study of fashions, modes, and manners in Western civilization as required for modern theatrical production; Greek through the Renaissance. (Lec. 3) 352: Continuation of 351; the Renaissance to the present. (Lec. 3) (A)

### 355 Stage Costume Design (3)

Costume design theories and techniques for modern and period plays in a wide variety of styles. (Studio 6)

### 362 Scene Painting (3)

Problems in scene painting, including use of color, basic techniques in scenic art such as texturing, trompe l'oeil, work from design elevations, carving, and some work in plastics. (Studio 3)

### 365 Scene Design (3)

Theories and techniques of scenic design, emphasizing conceptualization and development of stage setting through project designs for various stage

forms, production styles, and periods. (Studio 6) Pre: 261 or permission of instructor.

### 371 Stage Lighting (3)

Theories and techniques of lighting for the stage. A series of design projects introduces students to script analysis and conceptualization for lighting, instrumentation, and the use of color in stage lighting. (Lec. 2, Lab. 2)

### 381 History of Theatre to 1642 (3)

General history of the theatre from its origins through the Renaissance. Introduction to non-Western drama of the period. Course focuses on the actor, staging, and the audience as they have influenced the development of the theatre and dramatic literature. (Lec. 3) (A)

### 382 History of Theatre: Neoclassical Through the 19th Century (3)

Course includes non-Western drama of China, Japan, and Korea. Continuation of 381. (Lec. 3) (A)

### 383 History of the Modern Theatre (3)

Modern theatre and drama from 1880 to the present. Course includes new European stagecraft and its influence on the development of modernist and post-modernist drama, and contemporary non-Western drama. (Lec. 3) (A)

### 384 American Theatre History (3)

Origins and development of American theatre from the wilderness to the contemporary Broadway and off-Broadway stage, including the evolution of the musical play. Analysis of special contributions made by the grassroots movement, the university theatres, the Federal Theatre Project, and the regional theatre movement. (Lec. 3)

### 391 Advanced Production Laboratory (1–2)

Advanced instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions. (Independent Study) May be repeated for credit.

### 400 Advanced Individual Problems in Theatre Studies (1–3)

Advanced individual theatre work on an approved project under supervision of a member. (Independent Study) Pre: permission of. May be repeated for a maximum of 6 credits. Not for graduate credit.

### 401 Advanced Special Group Studies (1–3)

Advanced group theatre work in approved production projects under supervision of a member. (Independent Study) Pre: permission of. May be repeated for a maximum of 6 credits. Not for graduate credit.

### 411, 412 Scene Study (3 each)

Emphasis on the analysis and interpretation of assigned scenes representative of the major theatrical genres and styles. (Studio 6) Pre: for 411, 311, 312, and permission of instructor and concurrent

enrollment in 417; for 412, 411 and permission of instructor and concurrent enrollment in 418. Not for graduate credit.

### 413 Special Workshop in Acting (3)

Techniques related to a specific aspect or style of performance; e.g., masks, puppetry, verse-speaking, and improvisation. The study is normally related to a departmental production or special project. (Studio 6) Pre: permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit.

### 415 Professional Internship (6–12)

Designed for junior and first-semester senior theatre majors who desire a professional experience. This program provides instruction and practical experience in cooperation with a faculty advisor and a professional theatre. (Practicum) Pre: permission of chairperson. Not for graduate credit.

### 417 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 411. (Studio 2) Pre: concurrent enrollment in 411. Not for graduate credit.

### 418 Acting Workshop (1)

A voice-movement workshop to be taken concurrently with 412. (Studio 2) Pre: concurrent enrollment in 412. Not for graduate credit.

### 420 Advanced Directing Practice (1–3)

Special projects for the advanced directing student. Student directors will assume production responsibilities for all aspects of their projects, including a critical analysis upon completion. (Independent Study) Pre: 321, 322, or equivalent and permission of instructor. Not for graduate credit.

### 441 Advanced Theatre Management (3)

Individual projects of theatre management in a major departmental production or project. (Practicum) Pre: 341. Not for graduate credit.

### 451 Stage Costume Technology (3)

Construction methods and techniques appropriate to stage costuming with emphasis on major theatrical periods and productions. (Studio 6) Pre: 351 or 352 or permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit.

### 455 Advanced Costuming (1–3)

Individual projects in costume design for studio or major productions. Styles and theory related to projects; costume sketches and construction. (Independent Study) Pre: 355 or permission of instructor. Not for graduate credit.

### 463 Special Workshop in Design and Technical Theatre (3)

Techniques related to a specific aspect or style of production; e.g., masks, puppetry, wig making, sound effects, projections, properties. Normally related to a departmental production or special

project. (Lab. 6) May be repeated for a maximum of 6 credits. Not for graduate credit.

### 465 Advanced Scene Design (1–3)

Individual projects in designing scenery for studio and major productions. (Studio 2–6) Pre: 365 and permission of instructor. Not for graduate credit.

### 475 Advanced Stage Lighting (1–3)

Individual projects in lighting design and control for studio and major productions. (Studio 2–6) Pre: 371 and permission of instructor. Not for graduate credit.

### 481 Topics in Theatre (3)

Selected topics in theatre. (Seminar) May be repeated for credit with different topic.

### 484 Special Research Project (3)

An in-depth study of a single critical or historical aspect of theatre. The subject is normally related to a departmental production. (Independent Study) Pre: upper-division standing. May be repeated for a maximum of 6 credits. Not for graduate credit.

## University of Rhode Island Freshman Seminar (URI)

*Coordinator:* Dean Richmond

### 101 Traditions and Transformations: A Freshman Seminar (1)

Introduces first-year students to the traditions of higher education and academic culture and to significant societal and personal issues that bear on developing goals for the undergraduate years. Required of all new freshmen and new transfer students with less than 24 credits. May not be repeated for credit. Note: The community service component of URI 101 is part of the Feinstein Enriching America Program.

## Women's Studies (WMS)

*Interim Director:* Professor Grubman-Black

### 150 Introduction to Women's Studies (3)

Images of women in American culture, the theories and processes of socialization, historical perspectives, and implications for social change. (Lec. 3) (S)

### 210 Introduction to Feminist Theories (3)

Historical development of feminist thought, the exploration of contemporary feminist theories, including African-American, lesbian, Western and non-Western perspectives, and the future role of feminist theories. (Lec. 3)

### 220 Women and the Natural Sciences (3)

An interdisciplinary perspective on women as practitioners and subjects of the natural sciences; history of women in science; science as a gendered discourse. (Lec. 3) (L)

**300 Field Experience in Women's Studies (3-6)**

Supervised field work allowing students to learn through direct personal experience about the background, problems, and concerns of particular populations of women. (Practicum) Pre: 150 or 210 or permission of instructor. May be taken or repeated for a maximum of 6 credits.

**310 Race, Class, and Sexuality in Women's Lives (3)**

Interconnections among race, ethnicity, class, and sexuality and the impact of sexism, racism, classism, and heterosexism on women's lives are investigated. Alliance building among women is explored. (Lec. 3) Pre: 150 or 210 or permission of instructor.

**330 Feminist Methods (3)**

Distinguishing qualities of feminist methodologies are examined, including methods in the social sciences, humanities, and natural sciences. The interdisciplinary focus of feminist research and the future of feminist methods are considered. (Lec. 3) Pre: 210 or permission of instructor.

**333 Women in Irish Society (3)**

Roles of Irish women will be examined through historical and contemporary writings. The decline of women's power will be investigated and their current status will be assessed, especially in the Republic. (Lec. 3) (F) (L)

**350, 351 Special Topics in Women's Studies (1-3)**

Selected areas of study pertinent to women's studies. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Lec.) May be repeated with different topic.

**400 Critical Issues and Feminist Scholarship (3)**

Theoretical and value questions in women's studies; impact of feminist scholarship on traditional disciplines; feminist theory and research methods in selected fields; the future of feminism. (Seminar) Pre: 210, 310, 330 and senior standing or permission of instructor.

**450 Independent Study (3)**

Advanced work in women's studies under the direction of a faculty member affiliated with the women's studies program. (Independent Study) Pre: junior or senior standing. May be repeated for a maximum of 6 credits.

**490 Advanced Topics in Women's Studies (1-3)**

Advanced study in topics of special interest in Women's Studies. This course will be conducted as a seminar for juniors, seniors and graduate students. Pre: upper-division standing, 210, 310, 330 or permission of the instructor. (Seminar) May be repeated with different topic.

**Writing (WRT)**

*Director:* Associate Professor Reynolds

**101 Composition (3)**

Practice in the organization of ideas and language skills. Emphasizes steps in the writing process and responses to readings to develop ability, confidence, and clarity in writing. (Lec. 3) Not open to students who have completed CMS 101. Not for major credit in English. (Cw)

**201 Intermediate Writing: Academic Contexts (3)**

Study and practice in writing for a variety of academic audiences. Examination of the writer's roles and conventions of writing in selected academic communities. Writing from sources: library, field, and electronic. (Lec. 3) (Cw)

**227 Business Communications (3)**

Basic business communications forms, group reports and presentations, effective use of electronic mail systems, and design of graphic aids for successful visual communication. (Lec. 3) Open to business majors only. (Cw)

**235 Writing in Electronic Environments (3)**

Includes writing with computers; e-mail; Internet; text on screen, graphic- and audio-enhanced text; desktop publishing; study of document design and the history of writing as shaped by technologies. (Lec. 3) (Cw)

**301 Advanced Writing: Selected Contexts (3)**

Study and practice of writing for selected contexts, genres, and topics. Course focus varies among the following: culture and performance; public issues; travel and place; writing for community service. (Lec. 3) Focus on writing for community service is service learning. (Cw)

**333 Scientific and Technical Writing (3)**

Practice in specific forms of writing in the scientific and technical fields. (Lec. 3) Competence in basic skills required. (Cw)

**435 (or EDC 435) The Teaching of Composition (3)**

Philosophy, materials, and methods underlying the teaching of writing with emphasis on current approaches including the application of linguistics. Offers practice in writing workshop techniques, marking, constructing assignment sequences, and individualized instruction. (Seminar) Pre: junior standing or permission of instructor.

**497 Creative or Professional Writing and Publishing Capstone**

See English 497.

**512 (or ENG 512) Studies in Rhetorical Theory (3)**

Emphasis on written discourse and the relationships among language, epistemology, and subjectivity. Readings will range from classical to contemporary and will reflect the expanding canon of rhetorical theory. (Lec. 3) Pre: graduate standing or permission of instructor.

**524 Histories and Theories of Writing Instruction (3)**

Traces the origins and influences on current writing instruction, beginning with composition treatises of the 19th century and concluding with an analysis of contemporary practices. May include archival research. (Lec. 3) Pre: graduate standing or permission of instructor.

**647 Seminar in Research Methods: Rhetoric and Composition Studies (3)**

Advanced practice in the theory and design of research projects, emphasizing qualitative and quantitative studies. May include archival research, teacher-research, ethnographies, case studies, interviews, surveys, experiments, and discourse analyses. (Seminar) Pre: graduate standing or permission of instructor.

**999 Methods of Teaching College Writing (0)**

Materials and multiple methods of teaching writing on the college level. Required of teaching assistants who will teach in the College Writing Program unless waived by the director of English graduate studies, the supervisor of teaching assistants, and the director of the College Writing Program. (Seminar)

# DIRECTORIES

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Gerald Williams, M.A., *Director of Special Programs  
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for Student Affairs and Gay, Lesbian, Bisexual  
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Louise D. Rosarbo, B.A., *Director of Athletic  
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## Faculty (as of June 20, 2002)

### Faculty Emeriti

★Denotes graduate faculty

★Abell, Paul, Ph.D., *Professor of Chemistry*  
Abusamra, Ward, M.A., *Professor of Music*  
Abushanab, Elie, Ph.D., *Professor of Biomedical  
Sciences*  
Albert, Luke S., Ph.D., *Professor of Botany*  
★Alexander, Lewis M., Ph.D., *Professor of  
Geography*  
Allen, Anthony J., Ph.D., *Associate Professor of  
Education*  
Alton, Aaron J., Ph.D., *Professor of Marketing*  
★Anderson, Judith L., Ph.D., *Professor of  
Communication Studies and Women's Studies*  
Baer, Nadine, B.S., *Associate Professor, Library*  
Bailey, Richard E., Ph.D., *Professor of  
Communication Studies*  
Bancroft, J. Whitney, Ph.D., *Assistant Professor in  
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- ★deMesquita, Paul J.B., *Associate Professor of Psychology*, 1996. B.S., 1970, University of South Florida; M.S., 1973, Indiana University; Ph.D., 1987 University of Texas, Austin.
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- ★Matoney, Joseph P., Jr., *Professor of Accounting*, 1983, 1973. B.S., 1967, M.B.A., 1968, Duquesne University; Ph.D., 1973, Pennsylvania State University; M.S.T., 1984, Bryant College; C.P.A. (Rhode Island).
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- ★McIntyre, Richard, *Professor of Economics*, 1997, 1989. B.A., 1979, University of Rhode Island; Ph.D., 1989, University of Massachusetts.
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- Saunders, Sandra D., *Assistant Professor of Human Development and Family Studies*, 1981, 1977. A.S., 1962, B.S., 1977, M.S., 1980, University of Rhode Island; M.P.H., 1999, University of Connecticut.
- ★Schaffran, Jerome A., *Professor of Human Development and Family Studies*, 2002, 1977. B.A., 1964, St. Cloud State College; M.A., 1970, Ph.D., 1971, University of Iowa.
- ★Scheil, Katherine West, *Assistant Professor of English*, 1999. B.A., 1989, The Florida State University; M.A., 1990, Ph.D., 1995, University of Toronto.
- ★Schilling, Jean-Guy, *Professor of Oceanography*, 1974, 1966. Ingenieur, 1956, Ecole Supérieure Technique de Geneve; B.Sc., P.Eng., 1961, Ecole Polytechnique de Montreal; Ph.D., 1966, Massachusetts Institute of Technology.
- ★Schmieding, Norma Jean, *Professor of Nursing*, 1993, 1990. B.S., 1958, Nebraska Wesleyan College; M.S., 1966, Ed.D., 1983, Boston University.
- ★Scholl, Richard W., *Professor of Management*, 1990, 1979. B.A., 1972, United States Naval Academy; M.B.A., 1975, San Diego State University; Ph.D., 1979, University of California, Irvine.
- ★Schwartz, Marie J., *Associate Professor of History*, 2000, 1995. B.A., 1984, M.A., 1987, George Mason University; Ph.D., 1994, University of Maryland.
- ★Schwartz-Barcott, Donna, R.N., *Professor of Nursing*, 1992, 1975. B.S., 1966, University of Washington; M.S., 1970, M.A., 1972, Ph.D., 1978, University of North Carolina.
- ★Schwarz, Stephen D., *Professor of Philosophy*, 1979, 1963. B.A., 1955, Fordham University; M.A., 1958, Ph.D., 1966, Harvard University.
- ★Schwarzbach, Henry R., *Professor of Accounting*, 1988, 1976. A.B., 1968, University of California; M.B.A., 1972, University of Hawaii; D.B.A., 1976, University of Colorado; C.P.A.
- ★Schwegler, Robert A., *Professor of English*, 1991, 1978. B.A., 1968, Hope College; M.A., 1970, Ph.D., 1978, University of Chicago.
- ★Seemann, Jeffrey R., *Dean of the College of the Environment and Life Sciences and Professor of Cell and Molecular Biology*, 2001. B.A., 1977, Oberlin College; Ph.D., 1982, Stanford University.
- Seigel, Jules P., *Professor of English*, 1976, 1965. B.S., 1959, State University of New York, Cortland; M.A., 1962, Ph.D., 1965, University of Maryland.
- ★Seitsinger, Anne M., *Assistant Professor of Education*, 1999. B.S., 1976, Bridgewater State College; M.Ed., 1993, Rhode Island College; Ph.D., 1999, University of Rhode Island and Rhode Island College.
- ★Shaikh, Zahir A., *Professor of Biomedical Sciences*, 1986, 1982. B.Sc., 1965, M.Sc., 1967, University of Karachi; Ph.D., 1972, Dalhousie University.
- ★Shamoon, Linda Kaplan, *Professor of English, Director of the College Writing Program and Director of the Faculty Institute on Writing*, 1995, 1967. B.S., 1964, Purdue University; M.A., 1967, Tufts University.
- ★Shao, David M., *Associate Professor of Industrial Engineering*, 1976, 1969. B.S., 1960, Cheng-Kung University; M.S., 1966, University of Houston; Ph.D., 1970, State University of New York, Buffalo.
- Sharif, Mohammed, *Professor of Economics*, 1996, 1984. B.A., 1966, M.A., 1967, Dacca University; Ph.D., 1983, Boston University.
- ★Shaw, Richard J., *Associate Professor of Plant Sciences*, 1976, 1970. B.S., 1961, University of Rhode Island; M.S., 1963, Ph.D., 1966, University of Missouri.
- ★Sheinin, Daniel A., *Assistant Professor of Business Administration*, 2002. B.A., 1983, Amherst College; M.M.Mkt., 1988, Northwestern University; Ph.D., 1994, Columbia University.
- ★Shen, Yang, *Assistant Professor of Oceanography*, 1998. B.S., 1984, Nanjing University, China; M.Sc., 1992, Ph.D., 1995, Brown University.
- ★Shim, Minsuk, *Assistant Professor of Education*, 1999, 1997. B.A., 1982, Seoul National University; M.A., 1990, Ph.D., 1995, University of British Columbia.
- ★Shimizu, Yuzuru, *Professor of Biomedical Sciences and of Chemistry and Omar-Youngken Distinguished Chair in Natural Product Chemistry*, 1977, 1969. B.Sc., 1958, M.Sc., 1960, Ph.D., 1963, Hokkaido University.
- Shin, Seung Kyoan, *Assistant Professor of Business Administration*, 2002. B.S., 1992, Kyung-Hee University, Seoul Korea; M.I.S., 1998, Ph.D., 2002, State University of New York at Buffalo.
- ★Shukla, Arun, *Simon Ostrach Professor of Mechanical Engineering and Applied Mechanics*, 1997, 1981. B.S., 1976, Indian Institute of Technology; M.S., 1978, Ph.D., 1981, University of Maryland.

- ★Sigurdsson, Haraldur, *Professor of Oceanography*, 1980, 1974. B.Sc., 1965, Queen's University of Belfast; Ph.D., 1970, Durham University.
- ★Silverstein, Albert, *Professor of Psychology*, 1974, 1963. B.A., 1957, Cornell University; M.S., 1958, Yale University; Ph.D., 1963, University of California.
- ★Silvia, Antone J., *Professor of Communication Studies*, 1999, 1988. B.A., 1974, University of Rhode Island; M.A., 1976, Ph.D., 1993, University of Birmingham, England.
- ★Simeoni, Angelo E., Jr., *Professor of Community Planning and Landscape Architecture*, 1999, 1987. B.S., 1976, University of Rhode Island; M.L.A., 1979, Cornell University.
- ★Singer, Jay, *Professor of Communicative Disorders*, 2001, 1977. B.A., 1971, Brooklyn College; M.A., 1972, University of Florida; Ph.D., 1976, Case Western Reserve University.
- ★Sink, Clay V., *Professor of Management*, 1982, 1969. B.S., 1958, Pfeiffer College; M.S., 1964, University of Tennessee; Ph.D., 1968, Ohio State University; C.A.M., 1989.
- ★Smith, David C., *Assistant Professor, Graduate School of Oceanography*, 1997. B.S., 1984, California State University, Long Beach; Ph.D., 1994, Scripps Institution of Oceanography, University of California, San Diego.
- ★Smith, James Lewis, *Professor of Chemistry*, 2002, 1995. B.Sc., 1971, M.Sc., 1974, University of Puget Sound; Ph.D., 1980, University of British Columbia.
- ★Smith, Nelson F., *Professor of Psychology*, 1975, 1965. B.A., 1959, Colgate University; M.A., 1961, College of William and Mary; Ph.D., 1963, Princeton University.
- ★Sodhi, Manbir S., *Professor of Industrial and Manufacturing Engineering*, 2001, 1991. B.Prod.Eng., 1983; Jadaupur University; M.S., 1988, Ph.D., 1991, University of Arizona.
- ★Spaulding, Malcolm L., *Professor of Ocean Engineering*, 1983, 1973. B.S., 1969, University of Rhode Island; M.S., 1970, Massachusetts Institute of Technology; Ph.D., 1972, University of Rhode Island.
- ★Specker, Jennifer L., *Professor of Oceanography and Biological Sciences*, 1993, 1984. B.A., 1973, Miami University; M.A., 1977, Ph.D., 1980, Oregon State University.
- ★Sperry, Jay F., *Professor of Biochemistry, Microbiology, and Molecular Genetics*, 1997, 1977. B.S., 1968, M.S., 1971, University of Nebraska; Ph.D., 1974, University of Kansas.
- ★Spivack, Arthur J., *Professor of Oceanography*, 2002, 2000. B.S., 1980, Massachusetts Institute of Technology; Ph.D., 1986, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.
- ★Starkey, James L., *Professor of Economics*, 1992, 1967. B.S., 1964, Ph.D., 1971, Boston College.
- Stauffer, John H., *Assistant Professor of Military Science*, 2000. B.A., 1980, Millersville University, Pennsylvania.
- ★Stein, Arthur, *Professor of Political Science*, 1974, 1965. B.A., 1958, Pennsylvania State University; M.A., 1962, Ph.D., 1965, University of Pennsylvania.
- ★Stein, Karen F., *Professor of English and Women's Studies*, 1992, 1968. B.A., 1962, Brooklyn College; M.A., 1966, Pennsylvania State University; Ph.D., 1982, University of Connecticut.
- ★Stepanishen, Peter R., *Professor of Ocean Engineering*, 1982, 1974. B.S., 1963, Michigan State University; M.S., 1966, University of Connecticut; Ph.D., 1969, Pennsylvania State University.
- ★Sterne, Evelyn, *Assistant Professor of History*, 1999. B.A., 1989, Yale University; M.A., 1994, Ph.D., 1999, Duke University.
- ★Stevenson, John F., *Professor of Psychology*, 1989, 1973. B.A., 1965, University of Rochester; Ph.D., 1974, University of Michigan.
- ★Steyerl, Albert, *Professor of Physics*, 1987. D.Sc., 1966, Massachusetts Institute of Technology; Ph.D., 1971, Technische Universität, Munich.
- ★Stolt, Mark H., *Associate Professor of Natural Resources Science*, 2002, 1997. B.S., 1982, M.S., 1986, University of Maryland; Ph.D., 1990, Virginia Polytechnic Institute and State University.
- ★Strom, Sharon Hartman, *Professor of History and Women's Studies*, 1982, 1969. B.A., 1962, Whittier College; M.A., 1968, Ph.D., 1969, Cornell University.
- ★Stucker, Brent, *Assistant Professor of Industrial and Manufacturing Engineering*, 1997. B.S., 1993, University of Idaho; Ph.D., 1997, Texas A&M University.
- ★Sullivan, Mary C., *Associate Professor of Nursing*, 2002, 1998. B.S.N., 1975, Salve Regina College; M.S.N., 1981, University of Nebraska; Ph.D., 1994, University of Rhode Island.
- ★Sullivan, William Michael, *Professor of Plant Sciences*, 2000, 1981. B.S., 1975, University of Rhode Island; M.S., 1978, University of Vermont; Ph.D., 1981, University of Nebraska.
- ★Sun, Gongqin, *Assistant Professor of Biochemistry, Microbiology and Molecular Genetics*, 2000. B.S., 1983, Nankai University, Tianjin, PRC; M.S., 1988, Ph.D., 1992, University of Nebraska, Lincoln.
- ★Sun, Ying, *Professor of Electrical Engineering*, 2000, 1985. B.S., 1978, National Taiwan University; M.S., 1982, University of Rhode Island; Ph.D., 1985, Worcester Polytechnic Institute.
- ★Sunak, Harish R.B., *Professor of Electrical Engineering*, 1991, 1985. B.E., 1969, University of Liverpool; Ph.D., 1974, University of Southampton.
- ★Surprenant, Carol F., *Associate Professor of Marketing*, 1988. B.A., 1974, Northland College; M.B.A., 1976, Ph.D., 1981, University of Wisconsin, Madison.
- ★Suter, Ann C., *Associate Professor of Classics*, 1993, 1987. A.B., 1959, Radcliffe College; M.A., 1979, Ph.D., 1984, Princeton University.
- ★Sutinen, Jon G., *Professor of Environmental and Natural Resource Economics*, 1988, 1973. A.A., 1962, Lower Columbia College; B.S., 1964, San Francisco State College; Ph.D., 1973, University of Washington.
- Suzawa, Gilbert S., *Professor of Economics*, 2002, 1971. B.A., 1965, M.A., 1967, University of Hawaii; Ph.D., 1973, Brown University.
- ★Swallow, Stephen K., *Professor of Environmental and Natural Resource Economics*, 1999, 1994, 1988. B.S., 1982, Cornell University; M.S., 1986, Ph.D., 1988, Duke University.
- Swan, M. Beverly, *Provost and Vice President for Academic Affairs and Associate Professor of English*, 1981, 1974. B.A., 1963, M.A., 1966, University of Rhode Island; Ph.D., 1977, Boston University.
- ★Swaszek, Peter F., *Professor of Electrical Engineering*, 2001, 1984. B.S.E.E., 1978, New Jersey Institute of Technology; Ph.D., 1982, Princeton University.
- ★Swift, Elijah, *Professor of Oceanography and Biological Sciences*, 1980, 1969. B.A., 1960, Swarthmore College; M.A., 1964, Ph.D., 1967, Johns Hopkins University.
- ★Swift, Judith M., *Professor of Theatre and Communication Studies*, 1986, 1971. B.A., 1968, M.A., 1971, University of Rhode Island.
- ★Swonger, Alvin K., *Professor of Biomedical Sciences*, 1985, 1971. B.A., 1967, Boston University; Ph.D., 1971, Dartmouth College.
- ★Taggart, David G., *Professor of Mechanical Engineering and Applied Mechanics*, 2002, 1989. B.S., 1978, University of Delaware; M.S., 1981, Rensselaer Polytechnic Institute; Ph.D., 1988, University of Pennsylvania.
- Teliha, James K., *Assistant Professor, Library*, 2000. B.A., 1982, M.A., 1993, University of Colorado; M.L.I.S., 1997, University of Oklahoma.
- ★Thiem, Leon T., *Associate Professor of Civil and Environmental Engineering*, 1989, 1983. B.S., 1973, University of Massachusetts; M.S., 1974, University of Illinois, Urbana; Ph.D., 1982, University of Missouri, Columbia.
- ★Thoma, Lubos, *Assistant Professor of Mathematics*, 2001. M.S., 1988, Czech Technical University; Ph.D., 1996, Emory University.
- ★Thompson, Robert Hugh, *Assistant Professor of Community Planning and Landscape Architecture*, 2000. B.A., 1982, Saint Mary's College; J.D., 1987, M.C.P., 1992, Ph.D., 1997, University of California, Berkeley.
- ★Thurston, Gary, *Professor of History*, 1984, 1966. B.A., 1962, Grinnell College; M.A., 1965, Ph.D., 1973, Columbia University.

- ★Travisano, Richard Vito, *Professor of Sociology and Anthropology*, 1998, 1969. B.A., 1961, University of Connecticut; M.A., 1967, Ph.D., 1973, University of Minnesota.
- ★Trivelli, Remo J., *Professor of Italian*, 1984, 1969. A.B., 1956, St. Peter's College; M.A., 1957, D.M.L., 1972, Middlebury College.
- ★Trostle Brand, Susan L., *Professor of Education*, 2001, 1985. B.S., 1973, Indiana University of Pennsylvania; M.Ed., 1975, West Virginia University; D.Ed., 1984, Pennsylvania State University.
- ★Trubiano, Mario F., *Professor of Spanish*, 1995, 1979. B.A., 1968, University of Massachusetts; M.Ed., 1969, Boston College; M.A., 1974, Ph.D., 1979, University of Massachusetts.
- ★Tryon, Jonathan Stedman, *Professor of Library and Information Studies*, 1994, 1969. A.B., 1955, Brown University; M.S., 1963, Columbia University; M.A., 1970, University of Rhode Island; Certificate in Advanced Librarianship, 1974, Columbia University; J.D., 1981, Suffolk University.
- ★Tsiatas, George, *Professor of Civil and Environmental Engineering*, 1998, 1988. B.S., 1979, National Technical University of Athens, Greece; M.S., 1982, Ph.D., 1984, Case Western Reserve University.
- ★Tufts, Donald W., *Professor of Electrical Engineering*, 1967. B.A., 1955, Williams College; S.M., 1958, Sc.D., 1960, Massachusetts Institute of Technology.
- ★Turnbaugh, William A., *Professor of Anthropology*, 1983, 1974. A.B., 1970, Lycoming College; Ph.D., 1973, Harvard University.
- ★Twombly, Saran, *Professor of Biological Sciences*, 2001, 1987. B.Sc., 1973, St. Lawrence University; M.A., 1975, Johns Hopkins University; Ph.D., 1983, Yale University.
- ★Tyce, Robert C., *Professor of Ocean Engineering and Oceanography*, 1992, 1983. B.A., 1969, University of California, San Diego; Ph.D., 1976, Scripps Institution of Oceanography, University of California, San Diego.
- ★Tyler, Gerry Ruth Sack, *Professor of Political Science*, 1993, 1966. B.A., 1960, University of Pittsburgh; M.A., 1961, Ph.D., 1972, Yale University.
- ★Tyrrell, Timothy J., *Professor of Environmental and Natural Resource Economics*, 1994, 1978. B.A., 1969, University of South Florida; M.A., 1977, University of Tennessee; Ph.D., 1978, Cornell University.
- ★Urish, Daniel W., *Professor of Civil Engineering*, 1991, 1978. B.S., 1954, University of Illinois; M.S., 1965, University of Washington; Ph.D., 1978, University of Rhode Island.
- ★Vaccaro, Richard J., *Professor of Electrical Engineering*, 1993, 1983. B.S.E.E., M.S.E.E., 1979, Drexel University; Ph.D., 1983, Princeton University.
- ★Valentino, Dominic, *Professor of Psychology*, 1991, 1973. B.A., 1963, California State University; M.A., 1966, Ph.D., 1971, University of California.
- ★Vangermeersch, Richard, *Professor of Accounting*, 1979, 1971. B.S.A., 1959, Bryant College; L.A.C., 1962, M.S., 1964, University of Rhode Island; Ph.D., 1970, University of Florida; C.P.A. (Rhode Island); C.M.A.
- ★Van Wyk, Judy A., *Assistant Professor of Sociology and Anthropology*, 2000. B.A., 1993, University of Oklahoma; M.A., 1995, Ph.D., 1999, University of Tennessee.
- ★Varki, Sajeev, *Associate Professor of Marketing*, 2002, 1998. B.Tech., 1984, Indian Institute of Technology; M.B.A., 1986, Indian Institute of Management; Ph.D., 1996, Vanderbilt University.
- ★Vaughn, Sue Fisher, *Associate Professor of English*, 1995, 1966. B.S., 1964, Kutztown State College; M.A., 1966, Miami University, Ohio.
- ★Veeger, Anne, *Associate Professor of Geosciences*, 1997, 1989. B.S., 1983, University of Pittsburgh; M.S., 1986, Syracuse University; Ph.D., 1991, University of Arizona.
- ★Velicer, Wayne F., *Professor of Psychology*, 1982, 1973. B.S., 1966, University of Wisconsin; M.S., 1969, Ph.D., 1972, Purdue University.
- ★Venkatesan, M., *Professor of Marketing*, 1988. M.S., 1962, Ph.D., 1965, University of Minnesota.
- ★Vetter, Frederick J., *Assistant Professor of Electrical and Computer Engineering*, 2002. B.S., 1984, M.S., 1988, M.B.A., 1989, University of California, Davis; M.S., 1994, Ph.D., 1999, University of California, San Diego.
- ★Veyera, George E., *Professor of Civil and Environmental Engineering*, 2002, 1988. B.S., 1978, University of Rhode Island; M.S., 1980, Ph.D., 1985, Colorado State University.
- ★Viau, Paula A., *Assistant Professor of Nursing*, 1992. B.S., 1969, M.S., 1983, University of Rhode Island; Ph.D., 1991, University of Connecticut.
- ★Viglionese, Paschal, *Professor of Italian*, 1988, 1964. B.A., 1955, Rutgers–The State University; M.A., 1959, University of California, Berkeley; Ph.D., 1969, Rutgers–The State University.
- ★Vittimberga, Bruno M., *Professor of Chemistry*, 1971, 1961. B.S., 1952, Massachusetts Institute of Technology; M.S., 1954, University of Rhode Island; Ph.D., 1957, University of Illinois.
- Vocino, Michael, Jr., *Professor, Library and Political Science*, 1993, 1980. B.S., 1968, Boston University; M.L.S., 1973, M.A., 1981, University of Rhode Island; C.G.S., 1999, Universiteit van Amsterdam.
- von Reinhart, Walter, *Associate Professor of German*, 2002, 1990. B.A., 1983, Universität Mannheim; M.A., 1986, University of Michigan; Ph.D., 1996, Brown University.
- Waldman, Ruth Chadwick, R.N., *Assistant Professor and Assistant Dean of Nursing*, 1975, 1974. B.S., 1962, University of Massachusetts; M.S., 1974, University of Rhode Island.
- ★Walton, Jean, *Associate Professor of English*, 1997, 1993. B.A., 1980, Simon Fraser University; M.A., 1983, Ph.D., 1988, State University of New York, Buffalo.
- ★Wang, Jyh-Hone, *Associate Professor of Industrial and Manufacturing Engineering*, 2001, 1995. B.S., 1980, Tunghai University; M.S., 1986, Ph.D., 1988, University of Iowa.
- ★Wang, Mulong, *Assistant Professor of Insurance*, 2001. B.S., 1996, University of Science and Technology of China; Ph.D., 2001, University of Texas at Austin.
- ★Wang, Yeqiao, *Associate Professor of Natural Resources Science*, 2001, 1999. B.S., 1982, Northeast Normal University, China; M.S., 1987, Changchun Institute of Geography, Chinese Academy of Sciences; M.S., 1992, Ph.D., 1995, University of Connecticut.
- ★Watts, D. Randolph, *Professor of Oceanography*, 1988, 1974. B.A., 1966, University of California; Ph.D., 1973, Cornell University.
- ★Weisbord, Robert G., *Professor of History*, 1973, 1966. B.A., 1955, New York University; M.A., 1960, Ph.D., 1966, New York University Graduate School.
- ★Welters, Linda M., *Professor of Textiles, Fashion Merchandising, and Design*, 1994, 1981. B.S., 1971, College of St. Catherine; M.A., 1973, Colorado State University; Ph.D., 1981, University of Minnesota.
- ★Wenisch, Fritz, *Professor of Philosophy*, 1980, 1971. L.B.A., 1964, Salzburg, Austria; Ph.D., 1968, University of Salzburg.
- ★Wessells, Cathy R., *Professor of Environmental and Natural Resource Economics*, 2000, 1989. B.S., 1982, M.S., 1984, Montana State University; Ph.D., 1990, University of California, Davis.
- ★Westin, Stuart A., *Professor of Management Science*, 1996, 1983. B.B.A., 1977, M.S.B.A., 1978, Ph.D., 1983, University of Massachusetts.
- ★White, Clement A., *Associate Professor of Spanish*, 1994, 1988. A.A., 1966, University of the Virgin Islands; B.A., 1968, M.A., 1976, Kent State University; Ph.D., 1987, Brown University.
- ★Whitworth, Ulysses G., Jr., *Assistant Professor of Fisheries, Animal and Veterinary Science*, 1997, 1992. B.S., 1974, D.V.M., 1976, Tuskegee Institute; M.P.H., 1983, University of North Carolina.
- ★Wichelns, Dennis G., *Associate Professor of Environmental and Natural Resource Economics*, 1992, 1986. B.S., 1976, M.S., 1981, University of Maryland; Ph.D., 1986, University of California, Davis.
- ★Wilga, Cheryl D., *Assistant Professor of Biological Sciences*, 2000. B.Sc., 1992, Ph.D., 1997, University of South Florida.



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- ★Willis, George H., *Professor of Education*, 1981, 1971. A.B., 1964, Hamilton College; M.A.T., 1965, Harvard University; Ph.D., 1971, Johns Hopkins University.
- ★Willis, W. Grant, *Professor of Psychology*, 1995, 1987. A.B., 1977, M.A., 1980, Ohio University; Ph.D., 1984, University of Georgia.
- Wills, V. Sheri, *Associate Professor of Art*, 2002, 1996. B.A., 1987, University of California, San Diego; M.F.A., 1992, M.A., 1995, School of the Art Institute of Chicago.
- ★Wimbush, Mark, *Professor of Oceanography*, 1990, 1977. B.A., 1957, Oxford University; M.A., 1963, University of Hawaii; M.A., 1964, Oxford University; Ph.D., 1969, Scripps Institution of Oceanography, University of California, San Diego.
- Wing, Richard A., *Associate Professor of Fisheries, Animal and Veterinary Science*, 1986, 1969. B.S., 1973, M.Ed., 1975, Rhode Island College; M.A., 1977, University of Rhode Island.
- ★Wishner, Karen, *Professor of Oceanography*, 1993, 1980. B.A., 1972, University of Chicago; Ph.D., 1979, Scripps Institution of Oceanography, University of California, San Diego.
- Wittwer, Christian, *Associate Professor of Theatre*, 1988, 1982. B.A., 1969, Emory and Henry College; M.F.A., 1973, University of Georgia, Athens.
- ★Wood, Mark D., *Associate Professor of Psychology*, 2002, 1998. B.A., 1990, Arizona State University; M.A., 1993, Ph.D., 1996, University of Missouri, Columbia.
- ★Wood, Stephen C., *Professor of Communication Studies*, 1995, 1982. B.S., 1969, California State Polytechnic University; M.A., 1978, University of Maine, Orono; Ph.D., 1984, University of Maryland.
- Wortman, Bryna M., *Assistant Professor of Theatre*, 1999. B.A., Barnard College, Columbia University; M.F.A., 1997, Brooklyn College, City University of New York.
- ★Wright, Raymond M., *Distinguished Engineering Professor of Civil and Environmental Engineering*, 1997, 1981. B.S., 1973, Tufts University; M.Eng., 1978, Ph.D., 1981, Pennsylvania State University.
- ★Wu, Li, *Assistant Professor of Mathematics*, 2000. B.S., 1988, Nankai University; M.S., 1995, Chinese Academy of Sciences; Ph.D., 1998, University of Wyoming.
- Wyant, Sarina Rodrigues, *Assistant Professor, Library*, 2002. B.S., 1983, Texas A&M; M.S.L.I.S., 1999, University of Rhode Island.
- ★Xiao, Jingjian, *Professor of Human Development and Family Studies*, 2001, 1992. B.S., 1982, M.S., 1986, Zhongnan University of Finance and Economics; Ph.D., 1991, Oregon State University.
- ★Yan, Bingfang, *Associate Professor of Biomedical Sciences*, 2001, 1997. D.V.M., 1982, Huazhong Agricultural University School of Veterinary Medicine; M.S., 1985, Nanjing Agricultural University School of Veterinary Medicine; Ph.D., 1994, University of Kansas Medical Center.
- ★Yang, Qing, *Professor of Electrical Engineering*, 1997, 1988. B.S., 1982, Huazhong University of Science and Technology; M.A.Sc., 1985, University of Toronto; Ph.D., 1988, University of Southwestern Louisiana.
- ★Yang, Sze Cheng, *Professor of Chemistry*, 1990, 1980. B.S., 1967, National Taiwan University; M.S., 1970, Ph.D., 1973, Columbia University.
- ★Yeaw, Evelyn, R.N., *Associate Professor of Nursing*, 1993, 1985. B.S., 1968, University of Rhode Island; M.S., 1970, Ph.D., 1983, Boston College.
- ★Yoder, James A., *Professor of Oceanography*, 1992, 1989. B.A., 1970, DePauw University; M.S., 1974, Ph.D., 1979, University of Rhode Island.
- ★Yoon, Mirang, *Assistant Professor of Physics*, 2000. A.B., 1992, Cornell University; Ph.D., 1998, Massachusetts Institute of Technology.
- ★Young, Betty, *Professor of Education*, 2001, 1989. B.S., 1969, Northern Illinois University; M.Ed., 1982, Ph.D., 1988, University of California, Los Angeles.
- ★Yu, Tong, *Assistant Professor of Business Administration*, 2002. B.S., 1990 Fudan University, Shanghai, China; M.B.A., 1996, Georgia State University; Ph.D., 2001, University of South Carolina.
- ★Zawia, Nasser H., *Associate Professor of Biomedical Sciences*, 1999. B.S., 1984, University of Massachusetts; M.S., 1986, Loma Linda University; Ph.D., 1989, University of California.
- ★Zeyl, Donald J., *Professor of Philosophy*, 1984, 1971. B.A., 1966, University of Toronto; Ph.D., 1972, Harvard University.
- ★Zhang, Zongqin, *Professor of Mechanical Engineering*, 2000, 1991. B.S., 1982, Huashong University of Science and Technology; M.S., 1987, Ph.D., 1990, Duke University.
- ★Zia, Hossein, *Professor of Pharmaceutics*, 1995, 1986. Pharm.D., 1963, University of Isfahan; M.S., 1966, University of Rhode Island; Ph.D., 1969, University of Georgia.
- ★Zucker, Norman L., *Professor of Political Science*, 1969, 1966. B.A., 1954, M.A., 1956, Ph.D., 1960, Rutgers-The State University.

## Adjunct Faculty

★Denotes graduate faculty

†Denotes professors in residence (graduate faculty able to serve as major professors)

- Abbott, Ann A., *Adjunct Instructor of Nursing*, 2000. M.S., 1986, University of Kansas.
- ★Abedon, David H., *Adjunct Associate Professor of Community Planning and Landscape Architecture*, 1995. M.A., 1972, University of Rhode Island.
- ★Abrams, David B., *Adjunct Professor of Psychology*, 1986. Ph.D., 1981, Brown University.
- Aguero, Max F., *Adjunct Professor of Environmental and Natural Resource Economics*, 1989. Ph.D., 1983, University of Rhode Island.
- Alario, Anthony J., *Adjunct Associate Professor of Nursing*, 1997. M.D., 1979, University of Massachusetts School of Medicine.
- Aldrich, Dianne J., *Adjunct Instructor of Nursing*, 1995. M.S., 1992, University of Florida, Gainesville.
- Aldrovani, Andrea, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1982, Boston College.
- Alfano, David, *Adjunct Assistant Professor of Psychology*, 1995. Ph.D., 1982, University of Notre Dame.
- Alkatib, Eid A., *Adjunct Assistant Professor of Civil and Environmental Engineering*, 1991. Ph.D., 1986, University of Rhode Island.
- Allen, Melody, *Adjunct Instructor of Library and Information Studies*, 1983. M.S., 1975, Simmons College.
- Almeida, Pamela G., *Adjunct Instructor of Nursing*, 1998. M.S., 1993, Northeastern University.
- ★Aloia, Mark, *Adjunct Assistant Professor of Psychology*, 1999. Ph.D., 1996, University of Mississippi.
- Amos, Duncan, *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 1982.
- Andersen, Peder, *Adjunct Assistant Professor of Environmental and Natural Resource Economics*, 1981. Cand. Ocean., 1979, University of Aarhus, Denmark.
- Anderson, Bradley, *Adjunct Associate Professor of Sociology*, 2002. Ph.D., 1984, Iowa State University.
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- Wilk, Jacqueline B., *Adjunct Assistant Professor of Psychology*, 1988. Ph.D., 1983, University of Rhode Island.
- ★Williams, David O., *Adjunct Assistant Professor of Biomedical Engineering*, 1977. M.D., 1969, Hahnemann Medical College.
- ★Winsor, David S., *Adjunct Assistant Professor of Community Planning and Area Development*, 1985. M.C.P., 1980, University of Rhode Island.
- Winthrop, Elizabeth F., *Adjunct Associate Professor of Food Science and Nutrition*, 1994. M.S., 1983, Tufts University.
- Wolinski, Mary E., *Adjunct Assistant Professor of Music*, 1992. Ph.D., 1988, Brandeis University.
- Womack, Julie Anne, *Adjunct Assistant Professor of Nursing*, 2000. M.S.N., 1994, Yale University.
- ★Wood, David H., *Adjunct Associate Professor of Mathematics*, 1988. Ph.D., 1972, University of Rhode Island.
- Wood, Sandra G., *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1989, University of Pennsylvania.
- ★Wright, Thomas E., *Adjunct Professor of Civil and Environmental Engineering*, 1983. M.S.E., 1975, West Virginia University.
- Wriston, Sara, *Adjunct Instructor of Nursing*, 1993. M.S., 1980, University of Pennsylvania.
- Wyman, Cynthia M., *Adjunct Assistant Professor of Pharmacy Practice*, 1992. M.B.A., 1986, Bryant College.
- ★Yen, Shirley, *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 1998, Duke University.
- Young, Michael A., *Adjunct Associate Professor of Psychology*, 1985. Ph.D., 1974, Adelphi University, Institute of Advanced Psychological Studies.
- Zakewicz, Helen, *Adjunct Assistant Professor of Nursing*, 1998. M.S., 1984, University of Illinois.
- Zannieri, Christina L., *Adjunct Instructor of Nursing*, 2001. M.S., 1997, Boston University.
- ★Zappardino, Pamela H., *Adjunct Assistant Professor of Psychology*, 1999. Ph.D., 1989, University of Rhode Island.
- Zartler, Ann S., *Adjunct Assistant Professor of Psychology*, 1986. Ph.D., 1978, University of Rhode Island.
- Zorabedian, Thomas R., *Adjunct Assistant Professor of Communication Studies*, 1998. Ed.D., 1991, Boston University.
- ★Zwick, William, *Adjunct Associate Professor of Psychology*, 1998. Ph.D., 1983, University of Rhode Island.
- ### Clinical Appointments
- ★Denotes graduate faculty
- Bratberg, Jeffrey P., *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2000, North Dakota State University.
- ★Carley, Rebecca, *Assistant Professor of Nursing*, 1991, 1990. M.S., 1982, Boston University.
- Congdon, Karen S., R.N., E.M.T., *Clinical Coordinator of Cardiac Rehabilitation*, 1986. B.S., 1973, M.S., 1986, University of Rhode Island.
- Connors, Elizabeth C., *Coordinator of the Speech and Hearing Center and Clinical Assistant Professor of Communicative Disorders*, 1998, 1986. M.A., 1981, Northern Michigan University.
- ★Coppa, Denise, *Clinical Assistant Professor of Nursing*, 1985. M.S., 1979, University of Colorado.
- Erickson-Owens, Deborah, *Assistant Clinical Professor of Nursing*, 1998. M.S. 1988, University of Utah.
- Evans, Marylee, R.N., *Clinical Assistant Professor of Nursing*, 1974, 1971. M.S., 1974, University of Rhode Island.
- Gerzevitz, Diane R., *Clinical Assistant Professor of Nursing*, 1994. M.S., 1987, University of Rhode Island.
- Guthrie, James R., *Clinical Professor of Health Sciences*, 1977. M.D., 1948, New York University College of Medicine.
- Haggerty, Margaret R., R.N., *Clinical Assistant Professor of Nursing*, 1975, 1973. M.S., 1972, Boston University; Certificate, Nurse Practitioner, 1979, University of Rhode Island.
- ★Katzanek, Robin J., *Clinical Assistant Professor of Physical Therapy*, 1996. M.A., 1987, University of Denver.
- Leone, Marion T., *Clinical Instructor of Respiratory Therapy*, 1978. R.N., 1959, Cambridge City Hospital.
- Lin, Sonia, *Clinical Assistant Professor of Pharmacy Practice*, 2000. Pharm.D., 1998, University of Colorado Health Sciences Center, School of Pharmacy.
- Luisi, Andrea, *Clinical Associate Professor of Pharmacy Practice*, 2002, 1996. B.S., 1990, Pharm.D., 1994, University of Rhode Island.
- Martins, Diane C., R.N., *Clinical Assistant Professor of Nursing*, 1985, 1981. M.Ed. 1981, Teachers College, Columbia University.
- Matson, Kelly L., *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2001, Purdue University.
- McLinden, John P., *Clinical Assistant Professor of Physical Therapy*, 1996. M.S., 1993, University of Rhode Island.
- Melbourne, Kathleen, *Clinical Assistant Professor of Pharmacy Practice*, 1998. Pharm.D., 1995, University of Rhode Island.
- Mercer, Judith, *Clinical Associate Professor of Nursing*, 1998. D.N.Sc., 1989, Catholic University of America.
- Orr, K. Kelly, *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2001, University of Rhode Island.
- Palm, Mary Louise, *Clinical Assistant Professor of Nursing*, 1982. M.S., 1975, University of Rhode Island.
- Pawasauskas, Jayne E., *Clinical Assistant Professor of Pharmacy Practice*, 1999. Pharm.D., 1998, University of Rhode Island.
- Robinson, Deirdre E., *Clinical Assistant Professor of Physical Therapy*, 1995. M.S., 1975, Long Island University; M.S., 1989, Northeastern University.
- Rogowski, Amy C., *Clinical Assistant Professor of Pharmacy Practice*, 1998. B.S., 1986, Old Dominion University; Pharm.D., 1997, University of Maryland.
- Ruggieri-Jones, Celeste, *Clinical Assistant Professor of Physical Therapy*, 1997. M.S., 1994, University of Rhode Island.
- Strong, Kathryn M., *Clinical Assistant Professor of Pharmacy Practice*, 1999. Pharm.D., 1998, University of Maryland.
- Theadore, Geraldine L., *Clinical Assistant Professor of Communicative Disorders*, 1998. M.S., 1987, University of Rhode Island.
- ### Research Appointments
- ★Denotes graduate faculty
- Baboian, Robert, *Adjunct Research Professor of Chemical Engineering*, 1993. Ph.D., 1964, Rensselaer Polytechnic Institute.
- Buckley, Francine G., *Adjunct Associate Research Professor of Natural Resources Science*, 1995, 1993. M.S., 1966, Cornell University.
- †★Buckley, P.A., *Adjunct Research Professor of Natural Resources Science and National Park Service Research Professor of Ecology*, 1990. Ph.D., 1966, Cornell University.
- Cioffi, Eugene A., *Assistant Research Professor of Chemistry*, 1995. Ph.D., 1985, University of Connecticut.
- Crisman, Everett A., *Assistant Research Professor of Chemical Engineering*, 1991. Ph.D., 1984, Brown University.
- DeRagon, William R., *Adjunct Assistant Research Wildlife Biologist*, 1991. M.S., 1988, University of Rhode Island.
- Gould, Lisa Lofland, *Adjunct Research Scientist*, 1998. M.S., 1972, University of Rhode Island.
- Gow, Arthur S., *Adjunct Research Professor of Chemical Engineering*, 1997. Ph.D., 1991, Pennsylvania State University.

- ★Hill, Robert B., *Research Professor of Biological Sciences*, 2002. Ph.D., 1957, Harvard University.
- Hutchinson, Mary F., *Adjunct Research Scientist*, 1995. M.S., 1990, University of Rhode Island.
- ★Jiang, Zhongchun, *Assistant Research Professor of Plant Sciences*, 2001. Ph.D., 1998, University of Rhode Island.
- ★Johnston, Robert J., *Assistant Research Professor of Environmental and Natural Resource Economics*, 1999. Ph.D., 1996, University of Rhode Island.
- Kellogg, Dorothy Q.N., *Adjunct Assistant Research Hydrologist*, 1995. M.S., 1993, University of Rhode Island.
- ★Kim, Chong S., *Adjunct Research Professor of History*, 1998. Ph.D., 1965, University of Washington.
- †★Larrat, E. Paul, *Research Professor of Applied Pharmaceutical Sciences and Director of Pharmacy Continuing Education Programs*, 2001, 1992. Ph.D., 1992, Brown University.
- Li, Jie-Fang, *Adjunct Assistant Research Professor of Physics*, 1999. Ph.D., 1992, Pennsylvania State University.
- ★Maranda, Lucie, *Assistant Research Professor of Biomedical Sciences and Environmental Health*, 1990. Ph.D., 1987, University of Rhode Island.
- Park, Eugene, *Associate Research Professor of Chemical Engineering*, 2001, 1994. Ph.D., 1993, University of Rhode Island.
- Rodman, Clarke A., *Adjunct Research Professor of Mechanical Engineering and Applied Mechanics*, 1991. A.B., 1946, Harvard University.
- ★Silva, Armand J., *Research Professor of Ocean and Civil Engineering*, 1976. B.S. Ph.D., 1965, University of Connecticut; P.E.
- ★Smayda, Theodore John, *Research Professor of Oceanography and Botany*, 1970, 1959. Dr. Philos., 1967, University of Oslo, Sweden.
- Tefft, Brian C., *Adjunct Assistant Research Professor of Natural Resources Science*, 1996, 1995. M.S., 1981, University of Maryland/Frostburg State University.
- ★Uht, Augustus K., *Research Professor of Electrical and Computer Engineering*, 2001. Ph.D., 1985, Carnegie Mellon University.
- ★Zhioua, Elyes, *Assistant Research Professor of Fisheries, Animal and Veterinary Science*, 1998. Ph.D., 1992, University of Neuchâtel.

## Visiting and Advisory Committees

### College of Arts and Sciences

- Michael K. Andreozzi, Vice President, Community Hearing Aids, Inc.
- Richard Beaupre, President, Chemart Company
- Bruce D. Campbell, Foster, R.I.
- Henry Guido Caniglia, President, Chef-a-Roni, Eastern Food Industries, Inc.
- Robbin A. Chaber-Morshuk, Newtown, Conn.
- Shannon Chandley, Amherst, N.H.
- Rep. Paul Crowley, LaForge Casino Restaurant
- Stephen M. Cunningham, Managing Director, Morgan Stanley & Co. Inc.
- Jon Dodd, Senior Vice President, Tuition Management Systems
- Judge Stephen Erickson, 6th Division District Court, Providence, R.I.
- Alan Fine, New Canaan, Conn.
- Peter Furness, Esq., Nixon Peabody
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- Rep. Nicholas Gorham, Esq., Gorham & Gorham
- Howard Gurvitch, Bear, Stearns & Co., Inc.
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- Anthony Perrotti, President, R.I. Analytical Laboratories, Inc.
- B. Michael Rauh, Senior Vice President, The Washington Trust Company
- Mark Ross, Vice President, Ross Simons, Inc.
- Larry Rubin, Managing Director, Bear Stearns & Co.
- Gregory Sabatino, Chief Technology Officer, Advance Interactive Management, Naval Undersea Warfare Center
- Dr. Christopher J. Savoie, Chairman and CEO, Gene Networks, Inc.
- Robert Terino, R. Terino & Associates
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- Lorne Adrain, Northwestern Mutual Life
- Donald B. Bibeault, Ph.D., President, Bibeault and Associates, Inc.
- Donald Breen Jr., Senior Vice President, John Morrell & Co.
- John J. Brough Jr., Partner, Priest Kortick & Gesmondi, Ltd.
- David J. Buckanavage, President, Sovereign Pacific Equity, Inc.
- Charlene K. Butler, Partner, Ernst & Young
- Sid Cohen, President, Domestic Television Distribution, Metro-Goldwyn-Mayer, Inc. (Retired)
- Robert L. Crandall, Chairman and Chief Executive Officer, AMR Corporation (Retired)
- Mark E. Crevier, Senior Vice President for Finance and Chief Financial Officer, Care New England
- Dennis Dallman, Chief Financial Officer, Dryvit Systems, Inc.
- Cynthia M. Deysher, Vice President of Finance Administration and Chief Financial Officer, ArrowPoint Communications Inc.
- Michael D. Fascitelli, President, Vornado Realty Trust
- Frank J. Feraco, President and CEO, Pentair Inc.
- Wendy P. Field, Executive Director, Warburg Dillon Read
- Howard S. Frank, Vice Chairman, Carnival Corporation
- Marianne Gattinella, Senior Vice President, Lehman Brothers, Inc.
- George Graboys, Chairman Emeritus, Board of Governors for Higher Education; Chief Executive Officer, Citizens Bank (Retired)
- George Hadfield III, Chief Executive Officer, East Bay Investments (Retired)
- Richard J. Harrington, Chief Executive Officer, The Thomson Corporation
- Deborah Imondi, Assistant Treasurer, Textron, Inc.
- Richard Jordan, Regional Vice President, Latin America/Asia, Warner Lambert Co.
- Carolyn Kiess, Senior Vice President, Boston Safe Deposit and Trust Company, Mellon Trust
- Peter Kirm, Partner, Anderson Consulting LLP
- Kenneth Knox, Penn Mutual
- Gary Kullberg, Chief Executive Officer, Kullberg Consulting Group
- Joseph E. LaPlume, Washington Trust Bank
- Robert E. Liguori, Esq., Managing Partner, Adler, Pollock & Sheehan
- Michael N. Matone, Northwestern Mutual Life Insurance Co.
- Randy M. Miller, President and Chief Executive Officer, Ready & Motivated Minds, Inc.
- Keith Moore, President, Jupiter Capital
- Felix W. Oziembleski, Chief Financial Officer, Outlet Communications, Inc. (Retired)
- Robert J. Petisi, The Thomson Corp.

Angela V. Piacitelli, Senior Vice President, Bay Bank Systems, Inc. (Retired)  
 Robert S. Russell, Chief Executive Officer, Rusco Steel Co., Inc.  
 Vincent A. Sarni, Chairman and Chief Executive Officer, PPG Industries, Inc. (Retired)  
 Sandro Segalini, General Director, General Motors Asian and Pacific Operations (Retired)  
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 Alfred Verrecchia, President of Global Operations, Hasbro, Inc.  
 Alan Wasserman, Attorney  
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 David Brook, Partner, Hamilton, Brook, Smith & Reynolds, P.C.  
 Ralph W. Browning, Vice President, Gilbane Building Co. (Retired)  
 Alfred Budnick, President, Cherry Semiconductor Corp. (Retired)  
 Albert E. Carlotti, Chairman, Board of Governors for Higher Education (Retired)  
 Rodger Dowdell Jr., Chairman, President, and Chief Executive Officer, American Power Conversion Company  
 Millard S. Firebaugh, Vice President, Electric Boat Corporation  
 Alicia M. Good, Chief, Division of Water Resources, R.I. Department of Environmental Management  
 Daniel Harple Jr., Chairman and CEO, Context Media  
 L. James Hubbard, Chairman, Precision Handling Devices  
 Russell Ide, President, RIDE Inc.  
 Heidi Kirk-Duffy, Chair, International Engineering Program Board  
 Phillip Kydd, Assistant Director, Rhode Island Department of Transportation, Administrative Division  
 Aurelio Lucci, President and Chief Executive Officer, Promptus Communications, Inc. (Retired)  
 Ralph Lux, President, Lux Associates, Inc.  
 Leone Mainelli, Regional Manager for Customer Service, Pratt & Whitney (Retired)  
 Edmund V. Marshall, Group Vice President, Textron, Inc. (Retired)  
 Raymond Marshall, Deputy Director, Narragansett Bay Commission

Charles T. Martin, Director, Engineering Education and College Liaison Programs, Raytheon Company (Retired)  
 Earl Messere, Technical Director, Naval Undersea Warfare Center (Retired)  
 William J. Murray, Senior Vice President of Manufacturing, Teknor Apex Company  
 Henry J. Nardone, Trident Program Manager, General Dynamics Corp. (Retired)  
 Paul J. Nordquist, Senior Staff Engineer, GTE Laboratories (Retired)  
 Dr. John Nystrom, Vice President, Arthur D. Little  
 Albert W. Ondis, Chairman and Chief Executive Officer, Astro-Med, Inc.  
 Simon Ostrach, Walter J. Austin Distinguished Professor, Case Western Reserve University  
 Robert E. Piacitelli, President, Miniature Casting Corp.  
 Lois Roberts, P.E., Lois Roberts Consulting Engineers  
 Madelyn Geisser Rumowicz, Director of Capital Management, New Jersey DOT (Retired)  
 Frank Schora, P.E., MC Power, Inc. (Retired)  
 Raymond B. Sepe, President, Electro-Standards Lab  
 William F. Silva, President, Catalysts and Services Division, Union Carbide Corp. (Retired)  
 John Slocum, President, Maguire Group, Inc. (Retired)  
 Dennis Sleister, President, Niche Medical Inc.  
 H. Winfield Tucker Jr., Chairman, Tuckahoe, Inc.

### College of Nursing

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 Teresa Chopoorian, Administrator, Mansion House  
 Kelly Cummings, Assistant Vice President and Trust Officer, Washington Trust Bank  
 Catherine Cummins, Child Care Coordinator, Newport Hospital  
 Joanne Dalton, Assistant Professor, University of Massachusetts-Boston  
 Mary Jane Fitzsimmons, Nursing Consultant  
 Lynne Francis, Vice President of Nursing and Patient Care, Newport Hospital  
 Janet Hirsch, Professor Emerita, URI College of Nursing  
 Dayle Joseph, Dean, URI College of Nursing  
 Sue Kermes, Community Leader  
 Jeanne Moore, Assistant Vice President, Government Relations, URI (Retired)  
 Kenneth Owens, Consultant, Public Relations  
 Edward Quinlan, President, Hospital Association of Rhode Island (HARI)  
 Cynthia Sculco, Associate Professor, Hunter College  
 Christine Sokoloff, Vice President for Therapeutic Services, Kent County Visiting Nurses Association  
 Barbara L. Tate, Dean Emerita, URI College of Nursing  
 Ruth Waldman, Associate Dean, URI College of Nursing

Sandra Zion, Vice President for Nursing, Rhode Island Hospital; Vice President, Delta Upsilon Chapter-at-Large, Sigma Theta Tau Honor Society (Retired)

### College of Pharmacy

Advisory Committee:  
 Christine Berard, R.I.S.H.P.  
 David Bettencourt, Brooks Drugs  
 Salvator E. Cappazzoli, R.I. Board of Pharmacy  
 Mario Casinelli, Oaklawn Pharmacy and Chairperson of the R.I. Board of Pharmacy  
 Steven Coffey, Dunnington Drug  
 David Feeney, Oxnard Pharmacy  
 John Grossomanides, R.I.S.P.A.  
 Charles Haytaian (Chairperson), Westerly Hospital  
 Jeffrey Newell, CVS and R.I. Board of Pharmacy  
 Henrique T. Pedro, URI College of Pharmacy and R.I.S.H.P.  
 Leslie Pires, Women & Infants Hospital  
 Sandra Rosa, Independent Pharmacist  
 Terry Short, CVS  
 Michael Simeone, Kent County Hospital  
 Industrial Consultants:  
 William L. Davies, Associate Director, Health Care Product Development, Procter and Gamble  
 Louis T. DiFazio, President, Technical Operations, Bristol-Myers Squibb Co.  
 Robert H. Hunter, Director, Public Policy, Merck, Sharp, and Dohme  
 Ernest Mario, President and Chief Executive Officer, Alza Corp.  
 Joseph A. Mollica, President, Pharmacopeia  
 John O'Donnell, Executive Vice President, Research and Quality Control, Mylan Labs  
 Anthony Palmieri III, Manager, Patent Liaison, Pharmacia & Upjohn

### Graduate School of Library and Information Studies

Alan J. Axelrod, Assistant Director, Development, URI  
 Melvoid J. Benson, House Deputy Majority Leader, R.I. House of Representatives  
 Margaret Bierden, Library Media Specialist, Kevin K. Coleman Elementary School  
 Shirley Cherry, Librarian-Teacher, Portsmouth High School  
 Isabel Espinal, Outreach Specialist/Reference Librarian, W.E.B. DuBois Library, University of Massachusetts-Amherst  
 Donna Gilton, Associate Professor, URI Graduate School of Library and Information Studies  
 W. Michael Havener, Director, URI Graduate School of Library and Information Studies  
 Arnold Hirshon, Executive Director, NELINET  
 Anne Parent, Regional Administrator, Central Massachusetts Regional Library System  
 Joan Ress Reeves, Chair, Library Board of Rhode Island  
 Helena Rodrigues, Dean of University Libraries, Johnson & Wales University

Pamel J. Scott, Information Coordinator, Pfizer, Incorporated  
Lauri Stevenson, Systems Specialist, Atlantic Data Services  
Diane R. Tebbetts, Associate Librarian, University of New Hampshire  
Dale Thompson, Director, Providence Public Library  
Barbara Weaver, Chief Information Officer, Rhode Island Office of Library and Information Services  
Linda Wood, Hope Valley

**Metcalf Institute for Marine and Environmental Reporting**

Monica Allen, Editor of the Editorial Page, The Standard-Times (New Bedford)  
David Baron, Journalist and Author  
Barbara Carton, Staff Reporter, The Wall Street Journal  
Lincoln Chafee, U.S. Senator, R.I.  
Hannah Metcalf Childs  
Trudy Cox, CEO, Preservation Society of Newport County  
Cornelia Dean, Science Editor, New York Times

Denise Dilanni, Executive Producer, WGBH Television  
Jack Driscoll, Editor-in-Residence, MIT Media Lab  
Stephen Hamblett, The Providence Journal  
George C. Homsy, Independent Producer, National Public Radio  
Richard Kerr, Senior Writer, Science  
Kathryn Kilguss, Attorney/Mediator  
John Knauss, Dean Emeritus, URI Graduate School of Oceanography  
Danielle Luttenberg, Marine Conservation Analyst, Environmental Defense  
James J. McCarthy, Professor of Biological Oceanography, Harvard University  
Alan McGowan, President, The Gene Forum  
Walter Middlebrook, Associate Editor for Recruitment, Newsday  
Beth Parke, Executive Director, Society of Environmental Journalists  
Bari Scott, Radio Producer, SoundVision Productions  
Robert Vanderslice, Chief, R.I. Department of Health  
Sandra Whitehouse, Environmental Consultant, Rhode Island

**Textiles, Fashion Merchandising, and Design**

Elizabeth Ann Coleman, Curator of Textiles and Costumes, Museum of Fine Arts, Boston  
David DaPonte, Assistant Manager of Product Research and Testing, L.L. Bean  
Anne Garland, Contract Specialist, BASF Corporation  
Clare King, Textile Marketing Consultant  
Christine Laudon, President, Griffin Manufacturing  
Paul Miller, Newport Preservation Society  
Nancy Olson, Product Manager, Kenyon Consumer Products  
Glenn Palmer, President and Chief Executive Officer, Best Manufacturing  
Leslie Regenbogen, President, Darlington Fabrics Corporation (Retired)  
Doug Systrom, Vice President for Staffing, TJX Corporation  
Andrew Weisbrot, Account Executive, Joseph Abboud



# APPENDIX



**T**he University of Rhode Island offers students a number of privately contributed loan and scholarship funds, as well as federal programs and general student aid information (see page 22).

## Loan Funds, Scholarships, and Special Awards

You can find a list of loan funds, scholarships, and special awards on page 325. For more information, contact Student Financial Assistance and Employment Services in Roosevelt Hall.

### Summary of Enrollment Fall Term 2001 (Nonduplicated)

#### Undergraduate Students (by College)

Arts and Sciences	2,111
Business Administration	898
Engineering	466
Environment and Life Sciences	385
Human Science and Services	1,025
Nursing	301
Pharmacy	311
University College	4,772
Continuing Education (B.G.S.)	544
Nondegree (Credit)	356
<i>Total (Male 4,846; Female 6,323)</i>	<i>11,169</i>

#### Graduate Students

Degree	1,949
Degree (Continuous Registration)	48
Nondegree (Continuing)	24
Postbaccalaureate (Temporary)	1,207
<i>Total (Male 1,230; Female 1,998)</i>	<i>3,228</i>

**TOTAL ENROLLMENT 14,397\***

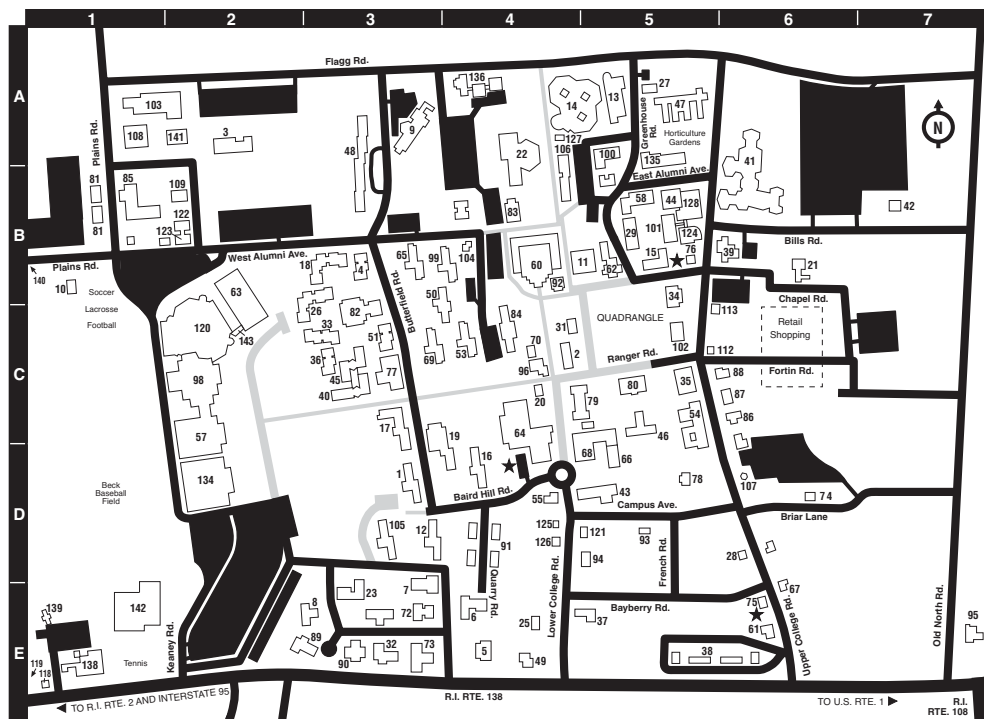
*\*includes 133 off-campus study students*

## URI Timeline

- 1888 State Agricultural School established  
Agricultural Experiment Station  
established  
Watson farm purchased as site
- 1889 Taft Laboratory  
John H. Washburn appointed principal
- 1890 South Hall
- 1891 College Hall  
Ladd Laboratory
- 1892 Rhode Island College of Agriculture  
and Mechanic Arts founded  
May 19  
John H. Washburn, President
- 1894 First class graduated  
Alumni Association formed
- 1895 College Hall burned and rebuilt as  
Davis Hall
- 1897 Lippitt Hall  
First *Grist* yearbook published
- 1898 Preparatory school established
- 1902 Homer J. Wheeler, Acting President
- 1903 Kenyon L. Butterfield, President
- 1904 Extension Department organized
- 1906 Howard Edwards, President  
Greenhouse and Horticultural Building
- 1907 Master's degree awarded for first time
- 1908 Preparatory school discontinued  
*The Beacon* (student newspaper)  
established as a monthly  
Rho Iota Kappa (first fraternity)
- 1909 East Hall  
By charter amendment, name changed  
to Rhode Island State College
- 1910 Theta Chi (first national fraternity)
- 1912 First fraternity house (Beta Phi)
- 1913 Ranger Hall  
Chapter of Phi Kappa Phi, national  
honor society
- 1918 Academic work suspended April 28  
Student Army Training Corps
- 1919 Academic work resumed January 2
- 1921 Washburn Hall
- 1924 Home Management House
- 1928 Memorial Gateway  
Bliss Hall  
Edwards Hall  
Rodman Hall  
East Farm acquired
- 1930 John Barlow, Acting President
- 1931 Raymond G. Bressler, President  
President's House

- 1932 Reorganization of college: Schools of Engineering, of Science and Business, and of Agriculture and Home Economics
- 1934 Asa Sweet and Edward Sweet lands purchased
- 1936 Narragansett Marine Laboratory  
Animal Husbandry Building  
Eleanor Roosevelt Hall  
Quinn Hall  
Central Heating Plant  
Peckham farm purchased
- 1937 Green Hall
- 1938 Meade Field
- 1939 Board of Trustees of State Colleges created
- 1940 John Barlow, Acting President
- 1941 Carl R. Woodward, President
- 1942 War-accelerated program with summer term initiated  
Reorganization of School of Science and Business into separate schools of Science and of Business Administration  
Engineering Experiment Station established  
Industrial Extension Division established
- 1943 Army Specialized Training Unit assigned to college
- 1944 Second Peckham farm purchased  
Industrial Extension Division replaced by Division of General College Extension  
War-accelerated program ended in September
- 1945 Degree program in nursing established  
Sherman farm acquired
- 1946 Quonset hut colony erected as emergency housing project  
School of Home Economics established
- 1948 School of Arts and Sciences established  
Bachelor of Arts degree authorized by Board of Trustees
- 1949 Bachelor of Arts degree awarded for first time at June commencement
- 1950 Butterfield and Bressler Halls
- 1951 Name changed to University of Rhode Island by act of General Assembly
- 1952 Pastore Chemical Laboratory
- 1953 Chapter of Sigma Xi, national scientific honor society  
Frank W. Keaney Gymnasium  
Laboratories for Scientific Criminal Investigation established
- 1954 Rhode Island Memorial Union
- 1957 College of Pharmacy established  
URI Foundation established
- 1958 Francis H. Horn, President  
Degree of Doctor of Philosophy authorized by Board of Trustees  
Child Development Center  
Hutchinson, Peck, and Adams Residence Halls  
Hope Dining Hall
- 1959 Woodward Hall  
Administration Building  
Computer Laboratory established  
Potter Infirmary  
Wales and Kelley Halls
- 1960 Fish Oceanographic Laboratory  
Independence Hall  
Davis Hall and East Hall remodeled  
Bureau of Government Research established  
Faculty Senate established
- 1961 Graduate School of Oceanography  
Tucker, Merrow, and Browning Halls  
Gilbreth Hall
- 1962 Crawford Hall  
W. Alton Jones Campus acquired  
Research ship *Trident* commissioned
- 1963 Tyler Hall  
Graduate Library School established  
Weldin and Barlow Halls
- 1964 Fogarty Health Science Building  
Watson House restored
- 1965 Addition to the Memorial Union  
University Library  
Law of the Sea Institute established  
Sherman Maintenance Building  
Bachelor of Fine Arts and Bachelor of Music degrees authorized  
Research Center in Business and Economics established  
Water Resources Research Center established
- 1966 Aldrich, Burnside, Coddington, Dorr, Ellery, and Hopkins Halls, and Roger Williams Center  
Justin S. Morrill Science Building  
Fine Arts Center (Phase I)  
Institute of Environmental Biology established
- 1967 Ballentine Hall  
F. Don James, Acting President
- 1968 Kelley Hall Research Annex  
Pell Marine Science Library  
Horn Laboratory  
First Sea Grant received  
Werner A. Baum, President  
New England Marine Resources Information Program established
- 1969 Home Management Center  
Curriculum Research and Development Center established  
Heathman Hall  
Faculty Center  
International Center for Marine Resource Development established
- 1970 Fayerweather Hall  
Gorham Hall  
Consortium for the Development of Technology established  
Marine Advisory Service established
- 1971 Tootell Physical Education Center  
Fine Arts Center (Phase II)  
Conference Center, Jones Campus  
Administrative Services Center  
Board of Regents for Education (Education Act of 1969) takes over direction of higher education  
URI named one of first four Sea Grant Colleges and designated National Sea Grant Depository
- 1972 Biological Sciences Building  
Chafee Social Science Building  
University College established  
Coastal Resources Center established  
Graduate apartment complex
- 1973 William R. Ferrante, Acting President  
Research Aquarium  
Science Research and Nature Preserve Buildings, Jones Campus  
Community Planning Building
- 1974 Frank Newman, President  
Laboratory for the Study of Information Science founded
- 1975 Addition to the University Library
- 1976 Research ship *Endeavor* commissioned
- 1977 Bachelor of General Studies established  
White Hall  
Chapter of Phi Beta Kappa, national liberal arts honor society  
Center for Ocean Management Studies established  
Center for Energy Study established  
Regional Coastal Information Center established
- 1978 College of Human Science and Services succeeds College of Home Economics  
Norman D. Watkins Laboratory
- 1979 Information Center
- 1980 Institute for Human Science and Services established  
Robotics Research Center

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|---|---|--|
| <p>1981 Center for Atmospheric Chemistry established<br/>Division of University Extension name changed to College of Continuing Education<br/>Board of Governors for Higher Education established by act of General Assembly</p> <p>1983 Marine Resources Building<br/>Small Business Development Center established<br/>Edward D. Eddy, President</p> <p>1984 Labor Research Center established<br/>Food Science and Nutrition Research Center</p> <p>1985 Addition to Pastore Chemical Laboratory<br/>Applied Engineering Laboratory</p> <p>1986 Anatomy Laboratory<br/>Biotechnology Center established<br/>Division of Marine Resources name changed to Office of Marine Programs</p> <p>1988 Institute for International Business established</p> <p>1989 Fisheries and Marine Technology Building<br/>Pacific-Basin Capital Markets Research Center established<br/>Research Institute for Telecommunications and Information Marketing established</p> | <p>1990 W. Alton Jones Campus Environmental Education Center designated a National Center for Environmental Education</p> <p>1991 Robert L. Carothers, President<br/>Mackal Field House<br/>Library addition<br/>Social Sciences Research Center<br/>Engineering Building and addition to Kirk Laboratory<br/>Atmospheric Chemistry Center, Narragansett Bay Campus</p> <p>1992 URI Centennial Celebration<br/>New Sailing Pavilion, Point Judith Pond<br/>Renovation/addition to Memorial Union<br/>Restructuring of Keaney Gymnasium<br/>Sycamore Residential and Conference Lodge, W. Alton Jones Campus</p> <p>1993 Dining Services Distribution Center<br/>Century Walk installed on the Quadrangle</p> <p>1995 URI designated an Urban Grant Institution</p> <p>1996 College of Continuing Education's Shepard Building restored<br/>Coastal Institute, Narragansett Bay Campus</p> | <p>1998 New Multicultural Center<br/>CCE renamed the Alan Shawn Feinstein College of Continuing Education<br/>College of Resource Development renamed the College of the Environment and Life Sciences<br/>Ocean Technology Center opens</p> <p>1999 IEP House opens<br/>Vietnam War Memorial dedicated<br/>School of Education established</p> <p>2001 Coastal Institute, Kingston Campus<br/>Schmidt Labor Research Center named</p> <p>2002 URI Foundation Building<br/>Thomas M. Ryan Center<br/>Niles Farmstead Cemetery dedicated<br/>Keaney Gymnasium becomes headquarters of the women's volleyball team, and the Institute for International Sport's New England Basketball Hall of Fame<br/>Bradford R. Boss Ice Arena</p> |
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### Academic and Service Buildings

- \*\* 14 Upper College Road, undergraduate admissions 61 (E6)
- \*\* Adams Hall 1 (D3)
- \* Adams House 112 (C6)
- \*\* Administrative Services, campus mail, printing services 109 (B2)
- Agronomy Field House (Plains Rd.)
- Agronomy Greenhouse (Plains Rd.)
- † Alumni Center 87 (C6)
- Animal Care Facility (off Rte. 138 W.)
- Athletic Maintenance Facility 10 (B1)
- Automotive Garage 3 (A2)
- † Ballentine Hall, business administration 11 (B5)—  
\*interim location  
210 Flagg Rd. 141 (A2)
- \* Biological Sciences Building 14 (A4)
- \*\*\*Bliss Hall, engineering 15 (B5)
- † Bradford R. Boss Arena 142 (E1)
- \* Carloti Administration Building 2 (C4)
- \* Catholic Center 21 (B6)
- \*\* Central Receiving and Property 108 (A1)
- \* Chafee Social Science Center 22 (A4)
- \* Cherry Auditorium, engineering 124 (B5)

- \* Child Development Center 25 (E4)
- \* Christopher House, Hillel Center, fraternity managers 126 (D4)
- \*\* Coastal Institute 13 (A5)
- \* Cooperative Extension Education Center 135 (A5)
- \* Crawford Hall, chemical engineering 29 (B5)
- Davis Hall 31 (C4)
- DeWolf Anatomy Laboratory 127 (A4)
- \* Dining Services Distribution Center, purchasing 103 (A1)
- East Farm, aquaculture and pathology (off Rte. 108)
- \* East Hall, physics 34 (B5)
- \* Edwards Hall 35 (C5)
- \* Episcopal Center 37 (E5)
- \*\*\*Fernwood Apartments, communicative disorders (Rte. 138 W.) 119 (E1)
- \* Fine Arts Center 41 (A6)
- \* Fire Station 42 (B7)
- \* Fogarty Health Science Building, pharmacy 43 (D5)
- Food Science and Nutrition Research Center (Liberty Lane, off Rte. 138 W.)
- \* Gilbreth Hall, industrial engineering 44 (B5)
- † Green Hall 46 (C5)
- \*\* Greenhouses, insect quarantine lab 47 (A5)
- \* Hart House, labor research program 28 (D6)

- Housing Maintenance 122 (B2)
- Housing Storage 123 (B2)
- \*\* Human Resource Administration 70 (C4)
- \* Independence Hall 54 (C5)
- \* Independence Square II, physical therapy, speech and hearing clinic 138 (E1)
- \* Institute for International Sports Hall of Fame 118 (E1)
- International Center 121 (D5)
- \*\* IEP House, international engineering 86 (C6)
- \* Keaney Gymnasium 57 (C2)
- \* Kelley Hall, electrical engineering 58 (B5)
- \* Kirk Center for Advanced Technology 128 (B5)
- \*\* Landscape and Grounds 114 (A2)
- \* Library 60 (B4)
- Lippitt Hall, administrative computer center 62 (B5)
- \* Mackal Field House 134 (D2)
- Meade Stadium 63 (B2)
- \* Memorial Union 64 (C4)
- \* MHRH Special Care Facility (Rte. 138 W.) 139 (E1)
- \* Morrill Science Building, life sciences 66 (D5)
- \* Multicultural Center 96 (C4)
- \* Niles Farmstead Cemetery 143 (C2)
- \* Pastore Chemical Laboratory and Annex 68 (D5)
- \*\* Peckham Farm Animal Center, animal science (off Rte. 138 W.)

- Pharmacy Conference Center (Weldin House) 125 (D4)
- Planetarium 76 (B5)
- \*\* Police and Traffic Division 55 (D4)
- \* Potter Building, health services 77 (C3)
- \* Quinn Hall, human science and services, graduate admissions 79 (C5)
- \*\*\*Ranger Hall, botany 80 (C5)
- Research and Grant Accounting 20 (C4)
- \* Resource Development Laboratory, plant science, natural resources 27 (A5)
- \*\* Rodman Hall, community planning, library school 83 (B4)
- \* Roosevelt Hall, enrollment services, University College 84 (C4)
- Ruggles House 67 (E6)
- \* Safety and Risk Management (177 Plains Rd.) 140 (B1)
- \* Sherman Building, capital projects 85 (B1)
- Social Sciences Research Center 136 (A4)
- Storage 81 (B1)
- \*\* Taft Hall 92 (B4)
- \* Thomas M. Ryan Center 120 (C2)
- \* Tooteil Physical Education Center 98 (C2)
- \* Transition Center 49 (E4)
- \* Transportation Center 74 (D6)
- Tucker House 113 (C6)

- \* Tyler Hall, information services 100 (A5)
- \* University Club 39 (B6)
- \* URI Foundation 88 (C6)
- \* Visitors Center 107 (D6)
- \*\* Wales Hall, mechanical engineering 101 (B5)
- \*\*\*Washburn Hall 102 (C5)
- Watson House 104 (B4)
- \* White Hall, nursing 9 (A3)
- \*\* Women's Center 75 (E6)
- \* Woodward Hall, environment and life sciences 106 (A4)

### Residence and Dining Halls

- \*\* Adams Hall 1 (D3)
- Aldrich Hall 4 (B3)
- \* Barlow Hall 12 (D3)
- \*\*\*Bressler Hall 16 (D4)
- † Browning Hall 17 (C3)
- \* Burnside Hall 18 (B3)
- \* Butterfield Hall, residence and dining 19 (C4)
- Coddington Hall 26 (C3)
- \*\* Dorr Hall 33 (C3)
- Ellery Hall 36 (C3)
- \*\* Faculty Apartments 38 (E5)
- \*\* Fayerweather Hall 40 (C3)
- \*\* Gorham Hall 45 (C3)
- Heathman Hall 48 (A3)
- \*\* Hope Hall, dining 50 (B3)
- \*\* Hopkins Hall 51 (C3)
- \*\* Hutchinson Hall 53 (C4)
- \*\* IEP House 86 (C6)
- \*\* Merrow Hall 65 (B3)
- \*\* Peck Hall 69 (C3)
- \*\* President's House 78 (D5)
- \*\* Roger Williams Commons, residential life, dining 82 (C3)
- \*\* Tucker Hall 99 (B3)
- \*\* University Terrace Apartments 91 (D4)
- \*\* University Village Apartments (Rte. 138 W.)
- \* Weldin Hall 105 (D3)
- \*\* Women's Center, women in science and technology residence 75 (E6)

### Fraternalities and Sororities

- \*\* Alpha Chi Omega 5 (E4)
  - Alpha Delta Pi 6 (E4)
  - Alpha Epsilon Pi 7 (E3)
  - Alpha Phi 94 (D5)
  - \*\* Alpha Xi Delta 8 (E3)
  - Chi Omega 23 (E3)
  - Delta Zeta 32 (E3)
  - Phi Kappa Psi 72 (E3)
  - Phi Sigma Sigma 95 (E7)
  - \*\* Sigma Delta Tau 89 (E3)
  - Sigma Kappa 90 (E3)
  - Tau Epsilon Phi 93 (D5)
  - \*\* Tau Kappa Epsilon 73 (E3)
- \* Accessible to disabled  
 \*\* Partially accessible to disabled  
 \*\*\* Very limited access to disabled  
 † Under construction or renovation  
 ★ Visitor Parking—Stop at Visitors Center 107 (D6) for visitor's pass.

# LOAN FUNDS, SCHOLARSHIPS, AND AWARDS

## Loan Funds, Scholarships, and Awards

The following are privately contributed loan and scholarship funds. For federal programs and general student aid information, see pages 22–26 of the URI Catalog.

### LOAN FUNDS

Short-term loans of up to \$200 are available to full-time students who can demonstrate a means of repayment. These are interest-free loans that may be used only for education-related expenses and must be repaid within 90 days.

Short-term loan funds have been contributed by private donors. In addition to an unrestricted fund for undergraduates, loans are available to graduate and international students.

Included among the many donors to the Short Term Loan Fund are: Leroy F. Burroughs, Dean Mason Campbell Memorial, Norman M. Fain, Barney M. Goldberg, Patrons Association, Providence Engineering Society, Providence Wholesale Drug Company, University of Rhode Island Alumni Association, John H. Washburn Memorial, and Louisa White Fund. A separate short-term loan fund has been established in the name of Peter M. and Mildred J. Galanti.

Also, individual loan funds have been established in the name of the late Dr. J. Louis Jack in memory of his brother, Dr. Gabriel J. Jack, and his wife, Gladys E. Jack. These funds are available to any qualified URI students with financial need and good scholastic standing. Interest rate is one-half of prevailing rate.

Applications for short-term loans are available at Student Financial Assistance and Employment Services.

### SCHOLARSHIPS

#### \*Denotes scholarships available to graduate students

If not otherwise stated in the following descriptions, selection of recipient is made by Student Financial Assistance and Employment Services.

#### Any College of the University

**George and Violet Ajoitian Scholarship:** Income from endowment for a scholarship awarded annually to students with financial need.

**\*American Screw Company Foundation Scholarship:** Income from endowment awarded annually to worthy undergraduate or graduate students, with preference to children of former employees of the American Screw Company.

**Anthony Athletic Association Scholarship:** Income from endowment awarded annually to a graduate of Coventry High School with financial need.

**George E. Arnold '30 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**Aurora Civic Association Scholarship:** Income from endowment to support the University's general scholarship fund.

**\*John F. Bannon Scholarship:** Income from endowment awarded to deserving undergraduate or graduate students on the basis of financial need.

**\*Ann and Albert Barker Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a married student currently enrolled at the University with a GPA of 2.5 or better.

**Carlton and Olive Barton Scholarship:** Income from endowment awarded annually to an undergraduate student with an above-average academic record and genuine financial need.

**John M. Baxter Scholarship:** Income from endowment for a scholarship in men's basketball or men's track awarded annually to a student competing in one of these sports. Recipient selected by the director of athletics in consultation with basketball and track coaches. The funds were donated by the late John M. Baxter '52, Sun Life Assurance Company of Canada, and numerous others.

**Walter Beaupre Memorial Scholarship:** Income from endowment to be used at the discretion of the swimming coach with approval of the URI athletic director.

**Ralph S. Belmont, M.D., '31 Scholarship:** Income from endowment available to undergraduate students with financial need. First consideration given to graduates of Rogers High School in Newport.

**Artack and Elese Berberian Scholarship:** Income from endowment awarded annually to students with financial need, with preference to Armenian students.

**William Bingham Foundation Undergraduate Scholarship:** Income from endowment for scholarships awarded annually to supplement student financial aid, in instances where other available scholarship support is insufficient to meet student needs.

**Hank Blay Memorial Scholarship:** Income from endowment awarded annually to a student employed by, or whose parent is employed by, the Metropolitan Life Insurance Company, on the basis of academic performance and genuine financial need.

**Alice Bliss Memorial Scholarship:** Income from endowment awarded to students with financial need.

**Patrick K. Bolger Scholarship:** Income from endowment for a scholarship awarded annually to a student in the Special Programs for Talent Development program. Preference given to graduates of the community preparatory school program in South Providence. Selection made by Talent Development program.

**Brittingham/Pezzullo Scholarship:** Fund established to honor Mrs. Eva Stuebe, Tom Pezzullo Jr., and Ines Rose Longo. Income from endowment for a scholarship awarded annually to an incoming, first-year student who is a Rhode Island resident and a first-generation college attendee with demonstrated financial need.

**Gustin Buonaiuto Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Leroy F. Burroughs Memorial Scholarship:** Income from endowment awarded annually to a student with financial need.

**Ernie Calverley Scholarship:** Income from endowment for a scholarship in athletics with preference to men's basketball. If there is no men's basketball player with financial need, then the scholarship will be made available to a male or female student who is academically qualified (over a 2.00 grade point average) and who is participating in a varsity sport that is not fully funded by the Athletics Department. Recipients selected by the director of athletics.

**E. Doris Carney Memorial Scholarship:** Income from endowment awarded annually to the member of Phi Sigma Kappa having the highest grade point average. Phi Sigma National will match the award. Recipient selected by Student Financial Assistance and Employment Services and Phi Sigma Kappa.

**Carothers Centennial Scholarship:** Income from endowment awarded annually through the Centennial Scholarship Program.

**Robert L. Carothers and Patricia Ruane Scholarship:** Income from endowment for scholarships to minority students.

**Castellucci and Galli, Inc. Scholarship:** Income from endowment awarded annually to a student with financial need.

**Castrovillari Family Athletic Scholarship:** Income from endowment to support URI basketball. Recipient selected by the Athletics Department.

**Hazel Ruth Cavnor Memorial Scholarship:**

Income from endowment awarded annually to students on the basis of financial need and the student's application in studies.

**Centreville Savings Bank Scholarship:** Income from endowment for scholarships to undergraduate students who live in the Centreville Bank service area on the basis of merit (3.00 minimum average) and financial need.

**Harry C. Chandler '24 Memorial Scholarship:** Income from endowment awarded to students with financial need.

**Chi Omega '60s Scholarship:** Income from endowment for a scholarship awarded annually. Preference to a Chi Omega or to a son or daughter of a Chi Omega who is in good academic standing and displays leadership in the community. Recipient will be chosen by a Chi Omega committee led by Roberta Anderson.

**Citizens Bank Women's Athletic Scholarship:** Income from endowment awarded annually to a deserving woman who is loyal and ethical and who shows leadership and discipline, a Rhode Island high school graduate with outstanding athletic talent who maintains a 2.50 grade point average. Recipient may qualify for the scholarship in future years if she continues to meet the criteria. Selection made by a committee comprised of the senior women's athletics administrator at URI, a Citizens Bank representative, the director of athletics, and the director of student financial aid.

**\*George P. and Vera J. Clark Memorial Scholarship:** Income from endowment awarded annually to needy and worthy students with first preference to graduates of Chariho High School.

**Philip H. Clark Scholarship:** Income from endowment awarded to deserving undergraduates.

**Theodore S. and Elizabeth S. Clarke Endowment:** Income from endowment for athletic scholarships. Selection made by the athletic director.

**Barbara Marie Colavecchio Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic achievement. First preference to Rhode Island high school graduates.

**Commercial Management Service, Inc., Endowment:** Income from endowment for scholarships awarded annually to students demonstrating need with satisfactory academic standing.

**Kenneth L. and Bertha T. Coombs 4-H Scholarship:** Income from endowment awarded annually based on a combination of genuine financial need and academic performance. First preference to an entering student currently or formerly a 4-H member who is a resident of Rhode Island. Application to include a summary of student's 4-H experience.

**Jennifer Corbett Memorial Scholarship:** Income from endowment for scholarships awarded annually to the children of firefighters, policemen, and/or enlisted military personnel.

**Corner Kick Scholarship Fund:** Scholarship awarded to a male soccer player recommended by the head coach of the URI men's soccer team and the director of athletics, as approved by Student Financial Assistance and Employment Services.

**Cranston Print Works Company Scholarships:** Awarded to dependent children of employees. Available to qualified applicants for a maximum of two years at up to \$1,500 annually. Applications available at the office of the director of human resources, Cranston Print Works, Cranston, R.I.

**A.T. Cross Company Scholarship:** Income from endowment awarded to deserving students with financial need.

**Dr. Donald and Amelia Davidson Scholarship:** Income from endowment awarded annually to students in good academic standing with genuine financial need.

**Henry E. Davis Memorial Scholarship:** Income from endowment for scholarships to deserving students.

**Frances B. DeFrance Memorial Scholarship:** Income from endowment awarded annually to a woman student who is a Rhode Island resident on the basis of scholastic ability and financial need. Contributed by Chapter B, P.E.O., Kingston, R.I., in memory of one of its founders.

**Anna and Gregory Demetrakas Fund:** Income from endowment for scholarships awarded annually to Rhode Island students enrolled in the Feinstein College of Continuing Education who are majoring in mathematics or a related area on the basis of financial need and academic merit. Recipients selected by the Alan Shawn Feinstein College of Continuing Education Scholarship Committee.

**Ronald Denelle Endowment:** Income from endowment for a scholarship awarded annually to students in good standing at URI. Preference to South County residents.

**Paul DePace Scholarship Endowment:** Income from endowment, established by PARI in honor of Paul DePace, director of URI Capital Projects, for scholarships awarded to students who are permanently disabled.

**Colonel Joseph DeRita Football Scholarship:** Income from endowment awarded annually to a football player. Recipient selected by the Athletic Department.

**Leo F. DiMaio Jr. Scholarship:** Income from endowment for scholarships for students in the Talent Development program with a met financial need who exemplifies the Talent Development philosophy of hard work, program commitment, and academic achievement. Selection made by the Talent Development Program.

**Henry and Jane Donnell Scholarship:** Income from endowment for a scholarship awarded annually to a student with financial need. Recipient chosen by the Student Financial Aid Office.

**Dubee Family Scholarship Fund:** Income from endowment awarded annually to an undergraduate student, preferably African-American, with a good academic record and genuine financial need.

**Daniel R. Dye Memorial Scholarship:** Income from endowment awarded annually to a graduate of East Providence High School with financial need.

**Frances R. and James W. Eastwood '37 Scholarship:** Income from endowment awarded annually to a deserving student with demonstrated academic promise. Selection made by the Admissions Office.

**\*Dr. Edward and Polly Eddy Scholarship:** Income from endowment for a scholarship awarded to an international student. Scholarship was initiated in honor of Dr. and Mrs. Eddy's retirement from URI.

**James J. Federico Sr. '35 and James J. Federico Jr. Scholarship:** Endowment established as a permanent memorial in honor of James J. Federico and in recognition of his outstanding contributions, guidance, and example to youths at all levels of education and athletic participation. Income from endowment provides a scholarship awarded annually to a student-athlete graduating from Westerly High School.

**Ferland Corporation Scholarship:** Income from endowment awarded annually to students with financial need. Preference given to employees or children of employees of the Ferland Corporation, citizens of Pawtucket, and graduates of St. Raphael's Academy.

**Frank and Arthur Fiorenzano Scholarship:** Income from endowment awarded annually on the basis of financial need, with consideration given to academic excellence. Preference given to Rhode Island residents, or F.A.F., Inc. employees and their children.

**Michael J. Fitzgerald Scholarship:** Income from endowment for a scholarship(s) in the amount of \$500 awarded annually to a junior or senior member of the Lambda Chi Alpha fraternity on the basis of financial need, involvement in community service, and with a preference to a student wishing to work in a human service vocation.

**William N. '17 and Anita Fritsch Memorial Scholarship:** Income from endowment awarded to a student with financial need.

**Thomas A. Gamon Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students from Aquidneck Island.

**Beatrice and Tom Garrick Sr. Scholarship:** Income from endowment for a scholarship awarded annually to a minority student with financial need. The fund was established with proceeds from the 1988 NCAA basketball tournament.

**General Dynamics Electric Boat Division Scholarship:** Income from endowment for scholarships of \$350 awarded, with preference to children of full-time employees of the Quonset Point facility. The students must have financial need and must be studying business, engineering, or the sciences.

**Olive Z. Godfrey Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**Morton and Ruth Grossman Scholarship:** Income from endowment shared among the College of Nursing, turf research, and general need-based scholarships.

**George Hadfield III Scholarship:** Income from endowment awarded annually primarily to graduates of Tolman High School in Pawtucket.

**Carlisle Hall '15 Scholarship:** Income from endowment awarded to students with financial need, with preference to the Kappa Rho chapter of Phi Gamma Delta fraternity members and ROTC cadets.

**Louis Raymond Hampton '42 Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic performance. First preference given to engineering students who are dependent children of Providence Gas Company employees.

**Vasilios S. and Aphrodite Haseotes Scholarship:** Scholarship for an undergraduate student enrolled at URI whose home residence is any one of the New England states. While there is no academic programmatic criteria associated with the scholarship, the awardee must have a 3.00 or above quality point average, as well as having a demonstrated financial need. Students receiving the scholarship may be entering freshmen or upperclassmen. Final scholarship decisions are made by Student Financial Assistance and Employment Services.

**James H. Higgins Memorial Scholarship:** Income from endowment awarded to students with financial need. Gift is from the estate of Mrs. James H. (Ellen F.) Higgins.

**James H. Higgins Jr. Memorial Scholarship:** Income from endowment awarded to students with financial need.

**High School Model Legislature:** Amount of general fee awarded to an incoming freshman who has given an outstanding performance in the Model Legislature. Application must be made for this award. Recipients selected by the program director of the high school.

**Hoder Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Dr. Percy Hodgson Scholarship:** Income from endowment awarded annually to students with financial need, with preference to students from foreign countries.

**Hope Lodge #25 Masonic Scholarship:** Income from endowment for a scholarship awarded annually to a student who is a member or a close relation to a member of Hope Lodge #25 A.F. & A.M. Wakefield, on the basis of academic achievement and financial need.

**Hopkins Family Scholarship:** Income from endowment for support of Centennial Scholars at the University.

**Fran and Billie Horn International Scholarship:** Income from endowment for a scholarship awarded annually, with special consideration to students from foreign countries, on the basis of academic standing and financial need.

**International Grant:** A limited number of partial out-of-state tuition grants awarded by the Office of International Students and Scholars on the basis of financial need. Grants are not available to first-year students.

**Michael Jones Memorial Scholarship:** Income from endowment awarded annually to an East Greenwich high school student who will attend URI.

**Stephen M. Kaufman Memorial Scholarship:** Income from endowment for a scholarship awarded annually based on financial need.

**A. Livingston Kelley Memorial Scholarship:** Income from endowment, established by the will of A. Livingston Kelley, awarded annually to a worthy student with financial need who is a resident of Rhode Island.

**Sylvia C. and Frederick Kenner '38 Scholarship:** Income from endowment awarded annually to a URI freshman with genuine financial need who graduated from high school with an A- grade average or better.

**Kenyon Piece Dyeworks, Inc., Scholarship:** Income from endowment awarded annually to students with financial need, with preference to employees or children of employees of Kenyon Piece Dyeworks.

**Paul J. Kervick Family Scholarship:** Income from endowment awarded annually to deserving students from middle-income families, with preference to children of employees of Providence Steel and Iron Company with financial need.

**Key Container Corporation Scholarship:** Scholarship of \$4,000 awarded annually to a full-time undergraduate student on the basis of financial need and academic record. First priority to children of Key Container Corporation employees. If no children of employees apply, then award goes to a

Rhode Island high school graduate. Recipient must be a Rhode Island resident and U.S. citizen. Scholarship will be continued on to other years if recipient maintains a 2.50 grade point average.

**Chester H. Kirk Scholarship:** Income from endowment awarded annually to children of AMTROL, Inc. employees. Students without financial need will receive \$100; for other children of AMTROL employees, financial need and the amount of award will be determined by Student Financial Assistance and Employment Services.

**Kenneth L. and Marie V. Kirk Endowment:** Income from endowment for a scholarship awarded annually to a student being served by URI's programming for the physically challenged who is in good academic and social standing. First preference to a student from Rhode Island. Recipient selected by Student Financial Assistance and Employment Services in consultation with Disability Services.

**Harry Knowles Memorial Scholarship:** Income from endowment, established by the will of Harry Knowles, awarded annually to students with financial need.

**Irving Kopech Scholarship:** Income from endowment for a scholarship based on financial need.

**Harold Kopp Football Scholarship:** Income from endowment for a scholarship in football awarded annually. Recipients selected by the football coach and the director of athletics. See also: the Hoder Family, Gustin Buonaio Family, Pezzelli, John F. Quinn Fifth Quarter Club, and Rose Family endowments.

**June J. and Habib Koussa Scholarship:** Income from endowment for a scholarship awarded to a full-time undergraduate in engineering, business administration, resource development, or physical education with a minimum 2.75 average at URI, or a 3.00 if a freshman, who is a native-born citizen of the United States and demonstrates financial need. Preference to graduates of Central Falls or South Kingstown High School.

**Jack Kraft Endowment for Basketball:** Income from endowment for a scholarship in basketball established in honor of Jack Kraft, URI basketball coach and director of athletic giving, upon his retirement. Selection made by the director of athletics.

**Eleanor Lemaire Women's Athletic Scholarship:** Awarded to female student-athletes in any college. Selection made by the Lemaire Committee.

**Leviton Foundation, Inc., Scholarship:** Income from endowment for scholarships awarded annually to children and grandchildren of employees of American Insulated Wire, Atlas Wire & Cable, Cable Electric Products, Leviton Manufacturing, Rhode Island Insulated Wire, and other affiliated companies. Preference given to applicants who are undergraduates with financial need and high scholastic standing.

**Austin T. Levy Memorial Scholarship:** Income from endowment awarded annually to students with financial need, with preference to graduates of Burrillville High School.

**Rich Ligi Scholarship:** Award winner must be a full time NCAA/URI eligible baseball student athlete. It is to be a one year award which may be awarded to the same person in subsequent years.

**Lions Club of Westerly Scholarship:** Income from endowment awarded annually to graduates of Westerly High School with financial need, with preference given to upperclassmen.

**\*Little Family Foundation:** Junior Achievement Fellowships for full-time graduate business study. Recipients must have been Junior Achievement participants or advisors. Preference given to Rhode Island residents with two or more years of work experience, chosen by the graduate business faculty. If no Rhode Island residents are eligible, out-of-state students may be chosen.

**Thomas A. Macari Ice Hockey Scholarship:** Income from endowment for a scholarship in ice hockey awarded annually to a student who emulates the positive ideals of Tom Macari. Recipient selected by the hockey coaches and the URI recreational services director.

**Henry H. Mackall Scholarship:** Income from endowment awarded to students with financial need majoring in engineering, mathematics, natural sciences, or physical education.

**\*Edward Marth Scholarship:** A \$500 annual grant to a graduate student enrolled in the labor relations and industrial management program. Selection made by the Labor and Industrial Relations Program.

**Mary Matzinger Memorial Scholarship:** Income from endowment awarded annually on the basis of academic excellence.

**\*Sandra McCreight Scholarship:** Scholarship for women athletes. Selected by the Athletics Department.

**Messinger Family Scholarship:** Income from endowment awarded annually to a Rhode Island resident with financial need and at least a B average. The award will be made to an incoming freshman student and continue to the same student for the four years, assuming the criteria are continually met. Selection made by the dean of the College of Engineering.

**Minorities Scholarship Endowment:** Income from endowment awarded annually to a minority student with financial need. Recipient selected by Student Financial Assistance and Employment Services. Funds donated by the URI Alumni Association.

**Moore Company Scholarship:** Awarded annually to students with financial need, with preference to children of employees of the George C. Moore Company, in Westerly, Carr-Fulflex, Inc., in Bristol, and Darlington Fabrics, in Westerly.

**Richard B. Morrison Memorial Scholarship:** Income from endowment awarded annually to Rhode Island residents with financial need.

**Daniel J. and Blanche R. Murray Family Scholarship:** Income from endowment awarded annually to a student with financial need.

**Carl Myllymaki Memorial Scholarship:** Income from endowment for three equal scholarships to Westerly High School seniors who participate in sports, student government, or scouting. Carl Myllymaki was a URI student who was killed in action in Vietnam.

**Native American Scholarship:** Annual grant awarded to a student with financial need who is a Native American. (Tribal documentation must be provided.)

**Keith Nester Scholarship:** Income from endowment awarded annually to a member of a fraternity or a sorority in honor of Keith Nester, who retired after 23 years as director of the Fraternity Managers Association.

**Andrew J. Newman-John W. Chapman Scholarship:** Income from endowment awarded annually to a worthy male student in need of financial assistance, preferably to a member of the Lambda Chi Alpha fraternity.

**Dorothy M. Noble Awards:** Income from endowment for two \$150 book awards presented each spring to members of the Kappa Rho chapter of Phi Gamma Delta. Selection made by the Kappa Rho chapter.

**North Family Trust:** Annual grant to an entering student from Newport County.

**William E. O'Hara '81 Memorial Crew Scholarship:** Income from endowment for a scholarship awarded annually to a member of URI Crew who demonstrates leadership and academic excellence and who best exemplifies the spirit of URI Crew. Recipient selected by the University's recreational services director.

**Michelle Ohley Endowment:** Income from endowment for a scholarship awarded annually in women's athletics to a female student athlete in a varsity sport that is not fully funded by the Athletic Department. This endowment was established in the memory of Michelle Ohley, who was an avid basketball fan and sports enthusiast.

**Palmer Family Scholarship:** Income from endowment awarded annually to an undergraduate student.

**Peltier Family Endowment:** Income from endowment for a scholarship awarded annually to a student with high academic achievements and financial need.

**Petroleum Trust Fund:** Scholarship awarded to a member of the senior class.

**Pezzelli Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Edward E. and Ida Fisher Pierce Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**Brinton C. Piez Golf Endowment:** Income from endowment for a scholarship in men's golf awarded annually to a qualified student. Selection made by committee.

**Howard E. Possner, M.D., '37 and Dorothy Babcock Possner '37 Scholarship:** Income from endowment awarded annually to a premed student in good academic standing with genuine financial need.

**Providence Journal-Bulletin Scholarship:** Scholarship awarded annually with preference given to qualified sons and daughters of employees of the Providence Journal Company and its subsidiaries.

**Col. John Joseph '35 and Mary Drew Prybala Rhode Island National Guard Scholarship:** Income from endowment awarded annually to students on any URI campus who is a member of the R.I. Army or Air Force National Guard. Awards will be made in \$100 or \$500 increments by the Adjutant General of the State of Rhode Island. Applications are available at the Office of the Adjutant General, Armory of Mounted Commands, 1051 North Main St., Providence, RI 02904-5717.

**John F. Quinn Fifth Quarter Club Endowment:** Income from endowment added to the Kopp Scholarship fund awarded annually to a football player. Recipient selected by the football coach and the director of athletics.

**John F. Quinn Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**A. Robert Rainville Memorial Scholarship:** Income from endowment for scholarships awarded annually to current URI students who are winners of the annual A. Robert Rainville Leadership and Service Awards.

**Ram Club Scholarship:** Income from endowment for support of the general athletic scholarship program. Recipients selected by the Department of Athletics.

**Herbert D. and L. Marcella Randall Scholarship:** Income from endowment for scholarships divided equally between men's crew and men's tennis on the basis of financial need and academic ability.

**Rau Fastener Company Scholarship:** Income from endowment awarded annually to students, with preference to children of Rau Fastener employees.

**Elton Rayack Scholarship:** Scholarship awarded annually to a junior demonstrating financial need and scholastic achievement.



**Louis M. Ream Memorial Scholarship:** Income from endowment awarded annually to students with financial need.

**Mary Ellen Reilly Scholarship:** \$500 awarded annually to a woman student (sophomore or above) on the basis of academic excellence and financial need.

**Richard and Linda J. Rendine Scholarship:** Income from endowment for a scholarship to a student who is a graduate of Pittsfield (Mass.) High School with second preference to a Classical High School (Providence) graduate on the basis of a minimum 3.00 academic average and demonstrated financial need.

**Reserve Officers Training Corps (ROTC) Army Scholarship Program:** Two-, three-, and four-year scholarships are available to outstanding young students who are seeking not only a commission as an Army officer but a path of dynamic career opportunities. Selection is based on applicant's achievement, not financial status. Includes full tuition and fees, and up to \$1,200 for the school year, paid directly to the student. Contact the Department of Military Science.

**Rhode Island Women's Club of Providence Scholarship:** Income from endowment for a scholarship awarded annually to a woman who is a full-time meritorious student at URI (or women). Scholarship restricted to worthy and needy students. Recipients selected from among nominations from the academic deans by the Office of the Provost.

**Pasquale and Rosaria Rizzi Scholarship:** Income from endowment awarded annually to two or more junior or senior students who are members of the Beta Psi Alpha chapter of Theta Delta Chi fraternity on the basis of scholarship, achievement, and with a preference for financial need.

**Mary L. Robinson Scholarship:** Income from endowment, established by the will of Anna D. Robinson in memory of her mother, awarded annually to a worthy and needy female student.

**Rose Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Samuel and Gertrude J. Rosen Scholarship:** Income from endowment for a scholarship awarded annually to students with financial need.

**N. Edward Rosenhirsch Memorial Scholarship:** Income from endowment awarded annually to students with financial need.

**Dr. Joseph L.C. and Mary P. Ruisi Scholarship:** Awarded to undergraduates who are enrolled full-time on the basis of need and academic merit (a minimum grade point average of 2.5 in core courses). Recipient must be a graduate of Westerly or Chariho Regional High School.

**Sarni Family Endowment:** Income from endowment awarded annually for up to one-half of tuition costs. First preference to needy, qualified first-generation students of at least one Italian parent. Scholarships to be distributed equally among the colleges.

**A.A. Savastano '32 Scholarship:** Income from endowment for a \$500 scholarship in athletics awarded annually to a high school athlete letter winner with financial need. Student Financial Assistance and Employment Services or URI coaches may propose the recipient.

**Joseph J. Scussell '31 Scholarship:** Income from endowment awarded annually on the basis of academic performance and financial need.

**John Shepard II Memorial Scholarship:** Income from endowment for scholarships awarded annually to students in the Alan Shawn Feinstein College of Continuing Education on the basis of both academic record and financial need, with preference given to students with an interest in retailing or a related field. Selection made by the dean of this college and a scholarship committee created for this purpose.

**Barbara K. Simmons Memorial Scholarship:** Income from endowment for a scholarship awarded to a student from Aquidneck Island with genuine financial need and an above-average academic record. Order of preference: a student in animal science, a student working for a B.S. degree in science in the College of Arts and Sciences, a student in the College of Nursing, or a student in the College of the Environment and Life Sciences.

**Aleck Slade Scholarship:** Income from endowment for a scholarship in athletics awarded annually to an incoming freshman or fully matriculated student. Recipient selected by the director of athletics.

**Richard A. and Carolyn Soderberg Endowed Scholarship:** Income from endowment for a scholarship awarded annually on the basis of need to a South Kingstown High School graduate.

**Edwin S. Soforenko Scholarship:** Income from endowment awarded annually to deserving students, with first preference to employees of Insurance Underwriters, Inc., and their families.

**Harold B. Soloveitzik '35 Scholarship:** Income from endowment awarded annually to worthy students with financial need. First preference to students from the South County and Pawcatuck areas.

**Michael Spero '34 Scholarship:** Income from endowment awarded annually to American-born undergraduate students on the basis of financial need and normal progress toward completion of the baccalaureate degree.

**Ann Spruill Endowment:** Income from endowment for a scholarship based on academic excellence.

**\*Harold Stanzler Endowment:** In memory of Harold Stanzler, income from endowment for a scholarship awarded annually to a student attending the Alan Shawn Feinstein College of Continuing Education with preference to a student majoring in industrial relations.

**Albert Stone Memorial Scholarship:** Income from endowment scholarships awarded annually to students with good academic records and financial need.

**Student Senate Scholarship:** Income from endowment for a scholarship awarded annually to a student working with the Student Senate.

**Student-to-Student Scholarship:** Income from endowment awarded annually to a student with financial need.

**Stan Stutz Memorial Scholarship:** Income from endowment for an athletic scholarship awarded annually to students with financial need, with preference given to residents of Westchester County, N.Y. Selection made by the director of athletics.

**Alice M. Talbot Memorial Scholarship:** Income from endowment established by a \$10,000 gift from the Salvation Army in appreciation of Miss Talbot's past philanthropy to the organization, and added to by the Ted Clarke family and the URI Century Club. Awarded annually to a student selected in accordance with guidelines of the URI Century Club for scholarship recipients and with approval of the director of athletics.

**Frederick C. Tanner Memorial Fund:** Several awards available annually to students with financial need, with preference given to sons and daughters of Federal Products Corporation employees.

**Jacob and Baye Temkin Scholarship:** Income from endowment for a scholarship awarded annually based on academic achievement and financial need.

**Maurice and Valerie Tetreault Scholarship for Academic Integrity:** Income from endowment for a scholarship awarded annually to a deserving junior or senior based on academic performance.

**Frederick D. Tootell Memorial Scholarship:** Income from endowment for a scholarship awarded annually to members of the track team on the basis of athletic ability. Selection made by the scholarship committee of the track team.

**Triangle Club of Kingston Award:** Minimum of \$500 awarded annually to a female student from Rhode Island with financial need.

**Cecilia T. Trubiano Memorial Scholarship:** Awarded to incoming freshman students in the Talent Development program who graduated from the Providence public school system, in recognition of Cecilia Trubiano's commitment and dedication to the children of the Providence public schools. Recipient selected by Talent Development and Student Financial Assistance and Employment Services.

**\*Anna Tucker Scholarship:** Income from endowment for scholarships awarded annually to women athletes on the basis of financial need, membership in a varsity sport, and a minimum 2.5 average. Women with the greatest need who meet the other qualifications should receive the scholarships.

**Francesco and Mariannina Ucci Family Scholarship Endowment:** Income from endowment awarded annually to students who have completed their sophomore year and are majoring in a scientific discipline including, but not limited to, chemistry, engineering, biological or physical science, pharmacy, computer science, or premedical studies; with preference given to graduates of West Warwick High School. This fund was established by Pompelio A. Ucci, Class of 1943.

**University Grant:** The Board of Regents has made available a sum of money to be used for scholarships. While it is expected that in any year the great majority of these scholarships will be awarded to residents of Rhode Island, in certain exceptional cases out-of-state students may qualify.

**URI Alumni Association Presidential Scholarship:** Income from endowment for a \$1,000 award for the senior year to a son or daughter of a URI alumnus(a) who has the highest cumulative quality point average for three consecutive years at URI. In the event of a tie, the award is to be divided. Application to be made through the Alumni Association Office.

**URI Alumni Association Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Alumni Association Scholarship for Children of Alumni:** Six \$500 awards given annually to two sophomores, two juniors, and two seniors who are children of URI alumni. Awards based on highest quality point average for the previous academic year among the pool of applicants in each category. Awards will be given only to those who submit formal application. Selection made by the URI Alumni Association.

**URI Alumni Memorial Scholarship:** Income from endowment for a scholarship based on financial need.

**URI Alumni Ram Club Memorial:** Offered in honor of Rhode Island alumni who sacrificed their lives in two world wars. Recipients selected on the basis of financial need, campus citizenship, scholastic ability, and leadership as evidenced by participation in sports and other extracurricular activities. Selection made by Alumni Ram Club.

**URI Alumni Rhode Island High School Scholastic Scholarships:** Ten \$1,000 awards to incoming URI freshmen based on scholastic achievement, SAT scores, and overall record in humanities, psychology and sciences, the performing and studio arts, pure and applied sciences, and professional and human services. Open to all Rhode Island high school seniors. Selection made by the Alumni Association.

**URI Class of 1899 Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students on the basis of financial need.

**\*URI Class of 1930 Scholarship:** Income from endowment for two scholarships awarded annually to undergraduate or graduate students on the basis of financial need and academic ability. Undergraduate recipients selected by Student Financial Assistance and Employment Services; graduate recipients selected by the Graduate School.

**URI Class of 1931 Memorial Scholarship:** Income from endowment for scholarships awarded annually to students on the basis of financial need.

**\*URI Class of 1933 Graduate Fellowship:** Income from endowment for a graduate fellowship.

**URI Class of 1935 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1936 Scholarship Endowment:** Income from endowment for scholarships awarded annually to undergraduate students on the basis of financial need with preference given to lineal descendants of members of the Class of 1936. If no relatives of the Class of 1936 apply, the awards will go to any applicants the University selects based on financial need and academic performance.

**URI Class of 1937 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1938 Raymond G. Bressler Memorial Scholarship:** Established by the Class of 1938 on their 50th anniversary. Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1939 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1940 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1941 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1942 Memorial Scholarship:** Income from endowment for scholarships awarded on the basis of financial need.

**URI Class of 1943 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Classes of 1944-46 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1947 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1948 Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**URI Foundation Academic Excellence Endowment:** Income from endowment for scholarships to undergraduate students on the basis of academic excellence.

**URI Foundation Best and Brightest Scholarship:** Annual grants to incoming students who are residents of Rhode Island and have achieved academic excellence in high school.

**URI Foundation Boat Program Scholarship:** Scholarship support for a marine-related major or a crew or sailing team member. Awards based on a combination of superior academic performance and demonstrated need. Selection made by Student Financial Assistance and Employment Services. Award to be presented by the Boat Committee chair.

**\*URI Foundation Fellowship:** Income from endowment for a graduate student fellowship. Recipient selected by the dean of the Graduate School from University-wide recommendations.

**URI Foundation Trustees Scholarships:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Men's Tennis Scholarship:** Income from endowment for a scholarship to a student on the URI men's tennis team. Selection made by the Athletics Department.

**URI Parents Fund Scholarship:** Income from endowment for a scholarship awarded to students with financial need from a fund established by parents of URI students and the URI Patrons Association.

**Daniel Urish Books Scholarship:** Income from endowment will be used for "book scholarships" awarded annually at the discretion of the women's gymnastics team for members of URI's team.

**Wal-Mart Competitive Edge Scholarship Fund:** Awarded to an incoming freshman student majoring in a technology-related field. Recipient must be a Rhode Island resident; have applied for financial aid; demonstrated high academic achievement, community service, and leadership in high school; and be registered for at least six credits. This award is renewable each year providing the student maintains a 3.00 grade point average, is enrolled full-time each semester, and continues in a technological area.

**Wardwell Braiding Machine Company Endowment:** Income from endowment for scholarships awarded annually on the basis of merit.

**Washington Trust Company Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student from Rhode Island on the basis of merit and financial need.

**Washington Trust Scholarship:** This Washington Trust scholarship will be current (non-endowment) income, to be distributed to two URI students. Each student will receive a \$2,500 award. First preference will be given to students from South County, with a second preference to students from the Washington Trust service area (including relevant parts of Connecticut). Preference should also be given to incoming freshman students, but one award may be given to an upper class student. Recipients must have at least a 3.0 grade point average.

**Paul L. Watelet '34 Athletic Scholarship:** Income from endowment for athletic scholarships, with first preference given to a participant in URI men's basketball. Selection made by the director of athletics.

**George F. Weston Memorial Scholarship:** Income from a fund established by the Providence Technical High School Athletic Field Association awarded annually to graduates of Rhode Island high schools and college preparatory schools who demonstrate financial need. Preference is given to former students and descendants of former students and teachers of Technical High School of Providence.

**Francis J. Wilcox '51 Memorial Scholarship:** Income from endowment awarded annually on the basis of financial need.

**David R. Wilkes Scholarship:** Income from endowment awarded annually to a student with financial need, with preference given to a resident of Rhode Island.

**Frank and Natalie Williams '40 Scholarship:** Income from endowment for scholarships to undergraduate students in good academic standing with genuine financial need. First preference to students from Rhode Island.

**Ruth A. Williams Scholarship:** Income from endowment for scholarships awarded annually to students from the Westerly area.

**\*Woman's Seamen's Friend Society of Connecticut:** Awards to undergraduate and graduate students from Connecticut who are in marine-oriented programs and have financial need.

**Carl R. Woodward Memorial Scholarship:** Income from endowment, a gift from the Alumni Association, available annually to students with financial need.

**Lt. Charles Yaghoobian Jr. '65 Memorial Scholarship:** Income from endowment available to a student with financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley regardless of major.

## Arts and Sciences

**\*Ward Abusamra Scholarship in Music and Voice:** Income from endowment for a scholarship in music awarded annually to a graduate or undergraduate music major on the basis of merit. Preference given to students concentrating in voice or chorus. Recipient to be selected by the Department of Music Recruitment and Awards Committee during annual spring auditions.

**Heidi Allen Memorial Scholarship:** Income from endowment, established by parents and friends of Heidi Allen, awarded to a student with financial need who is a political science major.

**\*Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Lee Armstrong Memorial Scholarship:** Income from endowment for scholarships awarded annually to one or two undergraduate women in the College of Arts and Sciences on the basis of merit and financial need.

**Sonia Aronian and Geoffrey Gibbs Scholarship in Music Composition:** Income from endowment for a scholarship awarded annually to a music major who demonstrates artistic achievement in music composition. Selection by the Music Department.

**Balmforth Family Endowed Scholarship in Pre-Med Studies:** Income from endowment for a scholarship awarded annually on the basis of merit and need to support a student majoring in the biological sciences, chemistry, or any other program in the College of Arts and Sciences who has expressed an interest in medicine, veterinary medicine, or another health-related field.

**Victor J. Baxt Chemistry Scholarship Endowment:** Income from endowment for a scholarship awarded annually to graduate students in chemistry based on merit. Preference given for summer study and research. Selection made by the Department of Chemistry.

**Beaupre Family Scholarship:** Income from endowment for a scholarship awarded annually to a chemistry major with junior standing. Recipient should be a married student (preference given to a married student with at least one child) with financial need and a 2.80 grade point average or higher who is a resident of Rhode Island. The student may, in addition, receive the award in the senior year as long as criteria are still being met. If a chemistry major does not meet all of the above criteria, the award may be given to a qualified student in any of the other sciences.

**Bessie D. Belmont Memorial Scholarship:** Gift of Dr. and Mrs. Ralph S. Belmont in memory of his mother. Income from endowment awarded annually to an undergraduate majoring in natural sciences on the basis of scholarship and/or diligent application and financial need.

**\*Stanley Berger Memorial Scholarship:** Income from endowment awarded annually to a graduate student in clinical psychology. Recipient selected by the Department of Psychology.

**Mary Braga Scholarship:** Income from endowment for a scholarship to a female undergraduate in the College of Arts and Sciences of Portuguese descent. Preference will be given to a Rhode Island resident and to the older student. The dean of the College of Arts and Sciences will determine the recipient.

**\*Bertran M. Brown '36 Endowment:** Income from endowment for graduate student support in the Department of Chemistry.

**Phyllis R. Brown Chemistry Endowment:** Income from endowment for fellowship stipends awarded annually to graduate students who are in the graduate chemistry program. Selection made by the Chemistry Department.

**Norma Bugbee Memorial Scholarship Fund:** Income from endowment for scholarships for deserving upperclass students in the University's food sciences and nutrition, textiles, and music programs in loving memory of Norma Bugbee Starr, Class of 1944. Award of scholarships to be based upon candidate's scholastic achievements and ability without reference to financial resources of the candidate or his or her parents.

**R. Craig Caldwell Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in computer science on the basis of scholastic ability alone. Recipient selected by the College of Arts and Sciences.

**Roderick Caldwell Endowment Scholarship in Mathematics:** Income from endowment awarded annually to an undergraduate student majoring in mathematics who has demonstrated above-average academic promise and genuine financial need. Recipient selected by Student Financial Assistance and Employment Services and the Department of Mathematics.

**Bruce D. Campbell Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student in the Physics Department on the basis of academic merit with preference given to Rhode Island residents. Recipient selected by the chairperson of the Physics Department.

**Eleanor M. Carlson Trust Scholarship:** Income from endowment for scholarships awarded annually to students in the women's studies program. Recipient selected by the director of the women's studies program.

**Eleanor M. and Oscar M. Carlson Scholarship Fund:** Income from endowment for scholarships awarded annually to women students who are single-parent heads of household and who have one or more dependent children. Preference will be given to students who meet one or more of the following criteria: 1) choice of a nontraditional education track, 2) financial need, 3) good academic standing, 4) Rhode Island resident, and 5) a major or minor in women's studies. Recipients selected, in consultation with Student Financial Assistance and Employment Services, by a committee comprised of the head of the women's studies program, URI faculty members (three women and one man) associated with the women's studies program, and, if it exists, one member of the Women's Studies Council. One scholarship will generally be equal to in-state tuition plus a book allowance.

**College of Arts and Sciences Scholarship:** Income from endowment used for the benefit of undergraduate and graduate students in the College of Arts and Sciences. Awards will be made by the dean of the college based on financial need and academic qualifications.

**Paul H. Conway '84 Memorial Scholarship:** Scholarship providing tuition support for an in-state student, selected by an essay competition in the College of Arts & Sciences. Applicants should be Rhode Island residents majoring in any undergraduate degree program offered by the college, full-time students in good academic standing, in their sophomore or junior years. Students who may have had a challenging first semester at URI, but who have improved their subsequent academic performance, are encouraged to apply. Applications available in the dean's office.

**\*Department of Theatre Scholarship Endowment:** Income from endowment to be used for the benefit of the undergraduate and graduate students in the Department of Theatre. Scholarships will be awarded by the chair of the department, in consultation with Student Financial Assistance and Employment Services, and will be based on financial need and/or academic qualifications.

**Robert A. DeWolf Scholarship:** Income from endowment for a scholarship in zoology awarded annually. Recipient selected by the Department of Zoology.

**Dodd Family Scholarship:** Income from endowment awarded annually to a student with junior standing majoring in biology or an ocean-related field. The recipient should be from Rhode Island, have demonstrated financial need and at least a 3.00 grade point average.

**Carrie G. and Daniel M. Doody Memorial Scholarship:** Income from endowment for an award to the student(s) that best exemplifies the philosophy and spirit of the Department of Communication Studies.

**Otto Dornberg Study Abroad Endowment:** Income from endowment for awards to promote study abroad for students of German. Selection made by the German section of the Languages Department.

**Duffy Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a junior or senior majoring in economics, journalism, history or political science on the basis of academic average (3.8 or better) and demonstrated financial need. Recipient selected by the dean of the College of Arts and Sciences in consultation with the student financial aid office.

**\*Catharine and Walter Eckman Memorial Scholarship:** Income from endowment awarded annually to a graduate student in the humanities (including English, comparative literature, languages, history, philosophy, music, and political science). Recipient selected by the Graduate School Committee on Scholarships and Fellowships.

**Gardener, Ralph, Robert and England Scholarship:** Income from endowment for a scholarship in sociology for deserving students on basis of merit. Recipient selected by the chair of the Department of Sociology and Anthropology or designee.

**Thomas V. Falciglia Honorary Scholarship:** Income from endowment awarded annually to a music major concentrating in piano, organ, orchestral instrument, or voice on the basis of musical achievement or contribution to the music program, or to a musically talented freshman, with preference to students with financial need. Selection made by the Department of Music.

**\*Robert H. '35 and Marjorie P. Fillmore '36 Memorial Scholarship:** Income from endowment, established by Judith Ann Fillmore in memory of her mother and father, awarded annually to an undergraduate or graduate student on the basis of good scholastic standing who demonstrates financial need and is enrolled in an ocean science program. First consideration is given to sons and daughters of the URI Washington Alumni Club, Washington, D.C.

**Fine Arts Scholarship:** Scholarship awarded annually to a music major demonstrating financial need.

**Lillian and Benjamin Fine Memorial Scholarship:** Income from endowment awarded annually to an undergraduate in journalism with financial need.

**\*R. Ken Force Graduate Fellowship in Analytical Chemistry:** Income from endowment for a fellowship awarded annually to a graduate student studying analytical chemistry. Recipient selected by the Department of Chemistry.

**\*Alex V. and Elli A. Fricke Memorial Scholarship:** Income from endowment for scholarships awarded annually to students majoring in ecology-related programs on the basis of good academic standing and financial need. First preference to students from Cranston and/or Rhode Island.

**\*Elizabeth D. Futas Scholarship:** Income from endowment for a scholarship awarded annually to a student in the Graduate School of Library and Information Studies. Recipient selected by the GSLIS.

**Madelyn Grady Geisser Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a female student enrolled in the College of Arts and Sciences who demonstrates financial need and is a single parent, head of household. The scholarship will be in the form of either a tuition waiver, textbook waiver at the URI Bookstore, or day care waiver at the on-campus day care facility. Recipient selected by the dean of Arts and Sciences and Student Financial Assistance and Employment Services.

**Elia and Roberto Germani Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate in the College of Arts and Sciences on the basis of academic merit with preference given to Rhode Island residents. Recipient selected by the dean of the college.

**\*Graduate Library School Scholarship:** Income from endowment awarded annually to a student enrolled in the Graduate School of Library and Information Studies. Recipient selected by the GSLIS.

**Rox-Ellene Greenlaw English Scholarship:** Income from endowment for a scholarship awarded annually to a female English major in her third year at URI who is a Rhode Island resident. The award is based on academic excellence and achievement, dedication to studies, personal integrity, willingness to assist others, and love of the literary arts. Selection made by the Department of English.

**Cynthia Grinnell Scholarship:** Income from endowment for a scholarship awarded annually to women students majoring in mathematics or science based on financial need and academic merit.

**Dr. Adolphus C. Hailstork III Music Scholarship for Minority Students:** Income from endowment for a scholarship awarded annually on the basis of merit to minority students entering the Department of Music. Selection made by the Department of Music.

**Mona Zacaria Hamer Memorial Fellowship:** Income from endowment for a fellowship awarded annually in chemistry with preference to a student doing cancer-related research. Selection made by the Chemistry Department.

**John I. Hardy Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in biology.

**Hutton Senior Prize in Hispanic Studies:** Income from endowment for an award made annually to a senior specializing in Spanish or Hispanic studies who has taken a course devoted to the works of Cervantes or a course devoted to his classic *Don Quixote*, and has a 3.0 overall average and a 3.0 average in Spanish. Selection made by the Spanish section of the Languages Department.

**Frederick and Katherine Jackson Scholarship Endowment:** Income from endowment for a scholarship awarded annually to a student with financial need in the College of Arts and Sciences who is enrolled in the physical, biological, or social sciences, or in the humanities.

**Jazz Studies Scholarship:** Income from endowment for a student pursuing the study of jazz. Selection made by the Department of Music.

**\*G. Dickinson Kenney and Virginia Stiles Chemistry Scholarship:** Income from endowment for a scholarship awarded to an undergraduate chemistry major for summer study or research. If there is no qualified summer recipient, a scholarship will be awarded to an incoming or current undergraduate or graduate majoring in chemistry.

**Mary Langdon Memorial Scholarship in Voice:** Income from endowment awarded annually for a scholarship to a music major studying voice. Selection made by the Music Department.

**Lee Family Endowed Scholarship in Music:** Income from endowment awarded annually to incoming students (freshmen or transfer) in music with preference to those concentrating in composition, piano or saxophone. A returning music major may be eligible. Recipient selected by the Department of Music along with the department's Scholarship Committee.

**June Rockwell Levy Memorial Scholarship:** Income from endowment for a scholarship awarded annually to music students with financial need.

**John T. McCarthy '36 Memorial Scholarship:** Income from endowment for a scholarship in zoology awarded annually to a deserving junior or senior, with preference to a student planning to attend a veterinary school.

**Nancy McKinstry Endowed Scholarship in Economics:** Income from endowment for a scholarship awarded annually to students majoring in economics. The scholarship is based on merit and need.

**William D. and Clarice Metz Scholarship:** Income from endowment for an award annually to a graduating senior for excellence and a scholarship awarded annually to a graduate student in history who shows great promise in advancing the understanding of historical issues. Recipient selected from recommendations by history department faculty.

**Thomas W. Miller Scholarship:** Income from endowment for a scholarship awarded annually to students from New Jersey, preferably majoring in the sciences, with both financial need and academic achievement.

**Ryan Mone Memorial Scholarship:** Income from endowment awarded annually to graduating seniors at Martha's Vineyard Regional High School and then to graduating seniors of Cape Cod or Nantucket high schools who are planning to attend URI. Recipient selected by dean of Arts and Sciences and principal of Martha's Vineyard Regional High School.

**Mother Jones Endowed Scholarship:** Income from endowment for a \$500 scholarship in women's studies awarded annually on the primary basis of financial need and the secondary basis of scholarly excellence. Selection made by the Women's Studies Program Committee.

**E.A. Palmetier Memorial Award in Biological Sciences:** Income from endowment for an award given annually to an undergraduate student in the Department of Biological Sciences who demonstrates academic excellence. Recipient selected by the chairperson of the department of biological sciences.

**Pardee Memorial Scholarship:** Income from endowment will be awarded 50 percent to undergraduates majoring in, or incoming students intending to major in, economics or philosophy, and 50 percent to students studying at Richmond College in London, under the sponsorship of the American Institute for Foreign Study Program. Students must demonstrate financial need, be in good academic standing, and demonstrate motivation. Preference given to students from Maine.

**Colonel Alden E. Peterson Memorial Scholarship:** Income from endowment for a scholarship awarded annually in the field of languages or business based on students' academic average and financial need.

**Thomas R. Pezzullo Memorial Scholarship:** Income from endowment awarded to an undergraduate student on the basis of talent in theatre and on financial need. Recipient selected by the Theatre Department and Student Financial Assistance and Employment Services.

**Nancy Potter Endowment:** Income from endowment awarded to a high-ranking junior majoring in English. Recipients selected by the Department of English.

**Presser Scholarship:** Award given to an outstanding music major at or after the end of his or her junior year. Recipient selected by the Department of Music.

**W. Donald and Jane Rankin Scholarship in Music:** Income from endowment for a scholarship awarded annually to an undergraduate music student. Preference given to a student with financial need. Recipient selected by the chairperson of the Department of Music and Student Financial Assistance and Employment Services.

**Mary A. Silverman Ravin, M.D., '44 Scholarship:** Income from endowment for a \$250 scholarship given annually to the highest-ranking female pre-medical student at the close of her junior year.

**Elton Rayack Scholarship in Economics:** Income from endowment for a scholarship awarded annually to an economics major. Preference is given to those with financial need who have demonstrated a strong commitment to social justice and a strong academic record, based on GPA.

**Harold A. Riemenschneider Award:** Income from endowment for an award given annually to a student pursuing studies in radiation either in the Department of Biological Sciences or the Department of Chemistry. Recipient selected by Student Financial Assistance and Employment Services in consultation with these departments.

**Max Rosen Memorial Scholarship:** Income from endowment awarded annually to a student with financial need, preferably a junior, majoring in history with emphasis on American history. Selection made by the Department of History.

**Mark Ross Endowed Scholarship:** Income from endowment for annual awards to undergraduate Arts and Sciences students. Recipients selected by the College of Arts and Sciences.

**Brett Santoro Memorial Scholarship:** Income from endowment for a scholarship awarded annually, on the basis of need, to a student majoring in the biological sciences.

**Dana Shugar Memorial Scholarship:** Income from endowment for a scholarship to alternate between the English and Women's Studies departments. Selection made by the two departments.

**South County Center for the Arts Music Talent Scholarship:** Income from endowment for a scholarship awarded annually to full-time undergraduate music majors who are graduating from a South County high school (North Kingstown, South Kingstown, Chariho, Westerly or Narragansett) based on musical talent. If no entering freshmen from these schools is a music major, the scholarship can be awarded to a former graduate of South County high school. Recipient selected by an auditor before the scholarship and recruitment committee of the Department of Music.

**Edna L. Steeves Memorial Scholarship:** Income from endowment for a scholarship awarded annually to an English major with high academic achievement. Recipient selected by the Department of English.

**John Stitley Memorial Scholarship:** In memory of Professor John O. Stitley, Hon '71, income from endowment for a scholarship in political science.

**Donald Strauss Legislative Internship Endowment:** Income from endowment given preferably to a member of the junior class to finance a summer at the Rhode Island Legislature, serving either a state senator or state representative. Recipient selected by Department of Political Science designee.

**Mildred C. Thelen Scholarship in Spanish:** Income from endowment for a scholarship awarded annually on the basis of meritorious performance and financial need, to students majoring in Spanish.

**Daniel Thomas Scholarship in History:** Income from endowment for scholarships awarded annually to undergraduate history majors based on need and merit. Selection made by the Department of History and Student Financial Assistance and Employment Services.

**Ruth E. Trexler Scholarship:** Income from endowment for a scholarship in music. Recipient selected by the Department of Music.

**URI-Fleet Scholarship:** Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students with demonstrated financial need. The recipients must major either in economics or in business administration and maintain an overall 3.00 grade point average to retain the scholarship. Recipients selected by a committee of faculty from the Department of Economics and the College of Business Administration.

**\*Milton Waltcher '41 Memorial Endowment:** Income from endowment for annual awards to go to a deserving chemistry graduate student during summer months and to a deserving undergraduate student in mechanical engineering.

**Wardwell Braiding Machine Company Scholarship:** Students majoring in computer science or engineering are eligible for \$1,000 awards each year until graduation, provided they maintain a grade point average of 3.0 starting in their freshman year. First preference to URI students from immediate families employed by Wardwell, second preference to students enrolled from Pawtucket or Central Falls, and third preference to students from the Blackstone Valley.

**David Warren Scholarship:** Income from endowment awarded annually to a student majoring in political science. Recipient selected by the Department of Political Science.

**George Wiley Memorial Scholarship:** Income from endowment awarded annually to an African-American student in the College of Arts and Sciences who shows an interest in community service, government or issues of social concern. Recipient selected based on merit, by the dean with recommendations from interested faculty.

**\*Norris Wood Microbiology Award:** Income from endowment for an annual award in the field of microbiology. Recipient selected by the Department of Biochemistry, Microbiology and Molecular Genetics.

**Frank L. Woods Memorial Scholarship:** Established by family and friends as a permanent memorial in honor of Dr. Woods, URI professor of German and linguistics, the scholarship provides for support for a junior or senior majoring in German or German linguistics. Recipients will be chosen by members of the German faculty. Awards for tuition, fees, and other University expenses will be made by Student Financial Assistance and Employment Services.

**Wrigley Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in Italian who wishes to study abroad. Recipients selected by Professors Trivelli and Viglionese or their designees.

### Business Administration

**American Production and Inventory Control Society, Providence Chapter (APICS) Award:** Awarded annually to a senior with a major or minor in production and operations management who is also a member of APICS.

**AMICA Mutual Insurance Scholarship:** Income from endowment for scholarships to students in the College of Business Administration. Recipients selected by Student Financial Assistance and Employment Services and the college.

**Anderson Family Trust:** Income from endowment for a scholarship awarded to a student majoring in insurance.

**\*David Beretta '49 Endowment:** Income from endowment for a scholarship awarded annually to provide support for either a student enrolled in the College of Engineering with a minor in business or for a graduate in engineering who wishes to pursue full-time study for a master's degree in the College of Business Administration. Recipient selected by a joint decision of the deans of both colleges.

**Dr. Winfield S. Briggs Memorial Scholarship:** Income from endowment available to students in accounting with financial need.

**Frederick J. and Karen F. Buchsbaum Accounting Award:** Income from endowment for a scholarship awarded annually with preference to a third-year accounting major from New Jersey on the basis of merit and financial need. Selection made by the Department of Accounting and Student Financial Assistance and Employment Services.

**Saul Fern Marketing Scholarship:** Income from endowment to a junior majoring in advertising and/or marketing with preference to members of the Rho Iota Chapter of Zeta Beta Tau Fraternity.

**Warren Ferriter Memorial Scholarship:** Income from endowment awarded annually to majors in the College of Business Administration with outstanding academic records and demonstrated financial need.

**James '76 and Nancy '77 Forte Scholarship in Business and Nursing:** Income from endowment for a scholarship awarded annually in the College of Business Administration and the College of Nursing.

**Jack Fradin Scholarship:** Income from endowment awarded annually to a junior-year accounting major based on academic performance and financial need.

**Peter M. and Mildred J. Galanti Business Award in Accounting:** Income from this endowment will be given to a student based on financial need and academic performance.

**Peter M. and Mildred J. Galanti Scholarship:** Income from endowment awarded annually to a student from New Jersey enrolled in the College of Business Administration.

**Francis S. Goff Jr. '35 Scholarship:** Income from endowment awarded annually to undergraduate students majoring in business on the basis of good academic standing and genuine financial need. First preference to employees or children of employees of Providence Mutual Fire Insurance Company. Second preference to students from Rhode Island.

**Saul and Alfred Goldstein Scholarship:** Income from endowment available to a student with financial need, with preference to College of Business Administration students.

**\*George and Lois Graboys Minority Student Endowment:** Awarded annually to minority students with financial need wishing to pursue a business degree. First preference to undergraduates, but graduate students will be considered. The minimum grade point average for an undergraduate recipient is 2.70 and for a graduate student 3.00. Scholarships will be awarded to eligible students with the highest grade point average.

**David H. Gulvin Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a graduate or undergraduate student in the College of Business Administration who displays leadership in the community, has financial need, and is in good academic standing.

**Hospital Trust Minority Scholarship:** Income from endowment for four-year scholarships awarded annually to one male and one female minority student enrolled in the College of Business Administration who are graduates of a Rhode Island high school and are Rhode Island residents. Candidates must demonstrate academic and leadership potential, as well as financial need, as determined by Student Financial Assistance and Employment Services. Recipients may retain the scholarship for four years if they maintain a 2.50 grade point average. Recipient selected by the dean of the College of Business Administration.

**Independent Insurance Agents of Rhode Island Scholarship:** \$2,500 awarded annually to deserving students in risk management and insurance. Selection made by the Department of Finance and Insurance.

**Carl W. Kaiser Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a senior majoring in management with financial need.

**George B. and Mildred L. McKowen Scholarship:** Income from endowment to a student from New Jersey who is enrolled in the College of Business Administration.

**Anne O'Connell '60 and John D. Stich '76, M.S. '80 Memorial Scholarship:** Income from endowment for the support of an undergraduate business student studying in a German-speaking country, or if there is no such student, an undergraduate student attending the German Summer School of the Atlantic at URI. Recipient selected by the College of Business and the German Department.

**Colonel Alden E. Peterson Memorial Scholarship:** Income from endowment for a scholarship awarded annually in the field of languages or business based on students' academic average and financial need.

**Everett Picchione Memorial Scholarship:** Income from endowment for a scholarship in accounting awarded annually to a deserving student from Rhode Island. Recipient selected by Student Financial Assistance and Employment Services and the Department of Accounting.

**Ralph C. Potter Scholarship:** Income from endowment available to a student in the College of Business Administration with financial need.

**Rhode Island Association of Insurance and Financial Advisors Scholarship:** Income from endowment for a scholarship awarded annually to an outstanding student in finance who is a Rhode Island resident. Selection made by the Department of Finance.

**Rhode Island Society of Certified Public Accountants Scholarship:** An annual scholarship award of \$200 to a sophomore or junior majoring in accounting who has a good scholastic record. Selection made by the Department of Accounting.

**Brooksby A. Sanderson Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a worthy student with financial need who is majoring in accounting.

**Timothy J. and Mary English Sullivan Scholarship:** Income from endowment for scholarships awarded annually to students majoring in accounting with preference given to children of employees of Sullivan and Company.

**URI-Fleet Scholarship:** Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students with demonstrated financial need. The recipients must major either in business administration or in economics and maintain an overall 3.00 grade point average to retain the scholarship. Recipients selected by a committee of faculty from the College of Business Administration and the Department of Economics.

### Continuing Education

**Dr. Richard M. Bianco Scholarship:** Income from endowment for scholarships awarded annually to "women in transition" enrolled in the BGS Program of the Alan Shawn Feinstein College of Continuing Education for tuition and/or books on the basis of merit. Recipient selected by the ASFCCE Scholarship Committee.

**Walter A. Crocker Endowment Fund:** Income from endowment to provide grants to students in the Alan Shawn Feinstein College of Continuing Education, for expenses related to enrollment in the college. Recipients selected by the Crocker Scholarship Selection Committee.

**Lillian Feinstein Scholarships:** Income from endowment for scholarships to Alan Shawn Feinstein College of Continuing Education undergraduate students. The Feinstein Foundation and ASFCCE participate in selecting the recipients.

**\*NACM RISEN Endowed Scholarship:** Income from endowment will be divided 50/50 with 50 percent returning annually and the other 50 percent for a scholarship awarded annually, with preference to NACM RISEN members on the basis of need to students enrolled in the Alan Shawn Feinstein College of Continuing Education's business education program.

**Suzanna Anstine Norbeck Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a woman with minor children and financial need who is attending the Alan Shawn Feinstein College of Continuing Education with the goal of attaining a B.A or B.S.

**Janice Paff Memorial Scholarship:** Income from endowment awarded to a student in the Alan Shawn Feinstein College of Continuing Education, enabling him or her to take an initial course at AFSCCE and purchase books. Recipients selected by the vice provost of AFSCCE.

### Engineering

**Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Philip A. and Bette A. Ayoub Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in civil engineering based on academic excellence. Selection made by the College of Engineering.

**James L. Baldwin Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a civil engineering student.

**A.J. Beaudoin Memorial Scholarship (Electrical League of Rhode Island):** Two \$1,000 grants awarded annually to Rhode Island residents who are majoring in electrical engineering and who have financial need.

**\*David Beretta '49 Endowment:** Income from endowment for a scholarship awarded annually to provide support for either a student enrolled in the College of Engineering with a minor in business or for a graduate in engineering who wishes to pursue full-time study for a master's degree in the College of Business Administration. Recipient selected by a joint decision of the deans of both colleges.

**Norman H. Borden Memorial Scholarship:** Income from endowment established in the memory of Norman H. Borden awarded annually to a student majoring in chemical engineering with genuine financial need.

**Ronald and Lillie Bowden Memorial Scholarship:** Income from endowment for a scholarship to a student enrolled in the College of Engineering.

**George A. Brown Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in mechanical engineering.

**Gene Bucci Family Scholarship:** Income from endowment for a scholarship awarded at the direction of the chair of the Civil Engineering Department to a female student studying civil engineering who is a Rhode Island resident.

**Alfred S. Budnick Scholarship:** Income from endowment for a scholarship awarded annually to undergraduate students in engineering who have financial need and the ability to succeed in the program.

**Joseph L. Campanella Memorial Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a student who is a Bristol County resident, who maintains good grades, and is pursuing a degree in the Department of Chemical Engineering.

**Daniel O. Cargill Scholarship:** Income from endowment for a scholarship awarded annually to a student in civil engineering.

**Peter M. Carley '79 Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need, academic performance, or a combination of both, with preference to civil engineering students.

**\*Albert E. Carlotti Endowment:** Income from endowment for undergraduate and graduate students enrolled in the College of Engineering.

**Chemical Engineering Freshman Scholarship:** Income from endowment for scholarships for freshmen majoring in chemical engineering. Funded through the generous contributions of Harold N. Knickle. Selection made by the Department of Chemical Engineering.

**Cherry Semiconductor Scholarship Endowment:** Income from endowment for scholarships awarded annually in engineering. Preference to students who are Rhode Island residents with financial need and of high academic caliber. Recipients selected by the Dean of the College of Engineering.

**Dr. David J. Chronley Fund in Chemical Engineering:** Income from endowment for annual creativity awards for junior or senior undergraduate students in chemical engineering and need-based undergraduate scholarships in chemical engineering. Awards and scholarships awarded at the discretion of the department chairperson.

**Francis J. Connell '49 Memorial Endowment:** Income from endowment for a scholarship awarded annually to a junior or senior majoring in civil engineering on the basis of genuine financial need and acceptable academic performance. First preference to a student from Newport; second preference to a student from Rhode Island.

**Day Family Scholarship:** Annual scholarship awarded to a minority student entering as a full-time freshman who shows academic promise in the field of engineering and has demonstrated financial need. This scholarship will be renewed annually if a grade point average of 3.00 or higher is maintained and other criteria are met, as outlined by the donor. Preference will be given to (in the following order): graduates of Middletown High School, residents of Newport County, and Rhode Island residents.

**Kenneth A. Epstein Engineering Scholarship:** Annual grant for a scholarship to a student enrolled in the College of Engineering.

**Kam Esmail Endowed Scholarship Fund:** Income from endowment for annual, recurring scholarship awards for undergraduate students majoring in one of the traditional civil engineering areas of concentration. Criteria includes evidenced financial need, a Rhode Island resident, a graduate of a Rhode Island high school, and a U.S. citizen. Recipient selected by the College of Engineering.

**\*Matthew Flores Memorial Fund:** Income from endowment for a scholarship for an junior or senior majoring in mechanical, with an interest in robotics and/or biomedical research preferred, based on high academic achievement. Recipient selected by the College of Engineering.

**George Geisser Sr. Scholarship:** Income from endowment awarded annually to civil engineering student(s) in good standing and with financial need.

**George and Virginia Geisser Civil Engineering Scholarship:** Income from endowment for a scholarship awarded annually to a Rhode Island high school graduate planning to major in civil engineering who has financial need and a good academic record. Selection made by the Department of Civil Engineering and Student Financial Assistance and Employment Services.

**Gray Family Scholarship:** Income from endowment for a scholarship awarded annually to one or more Rhode Island resident undergraduate students in the College of Engineering. Recipient selected by the College of Engineering.

**Louis Raymond Hampton '42 Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic performance. First preference given to engineering students who are dependent children of Providence Gas Company employees.

**International Engineering Program Scholarship:** Scholarships awarded annually to students in the International Engineering Program. Recipients selected by the College of Engineering.

**Ronald C. Jalbert Scholarship Endowment:** Income from endowment for a scholarship for a declared undergraduate civil engineering major and a Rhode Island resident. Preference to be given to qualifying children from the Maguire Group, Inc. Scholarship award to be determined by the chair of the Civil Engineering Department.

**Amos Kent, P.E., Memorial Scholarship:** Income from endowment created by the National Council of Engineering Examiners. Awarded to a student in engineering who is entering the junior year on the basis of financial need. Selection made by the College of Engineering.

**Dean Thomas Kim Scholarship:** Income from endowment to be awarded to the most noteworthy freshman in the College of Engineering who has financial need. Recipient selected by the college along with Student Financial Assistance and Employment Services.

**Mason B. Kingsbury Memorial Scholarship:** Income from endowment for a scholarship in engineering awarded annually. Recipient selected by the College of Engineering.

**Leonard '43 and Elena Lanni Family Endowment:** Income from endowment awarded annually to a major in mechanical or chemical engineering. Preference to a first-generation American who graduated from a Rhode Island high school and has genuine financial need and an acceptable academic performance. Recipient selected jointly by Student Financial Assistance and Employment Services and the College of Engineering.

**James M. Lenehan Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Engineering with academic ability and financial need. First preference given to a student majoring in mechanical engineering whose practical experience or schooling and activities demonstrate that the student is a self-starter likely to become a manager of engineers.

**\*Gabriel Lengyel Fellowship in Electrical Engineering:** Income from endowment established by the late Ruth Braun for a fellowship awarded annually to the graduate student in electrical engineering with the most outstanding scholastic achievement.

**Rosario J. Lombardo Scholarship in Engineering:** Income from endowment for a scholarship awarded annually to a female student in the College of Engineering on the basis of financial need.

**Robert A. Lusi Engineering Scholarship:** Income from endowment for scholarships awarded annually to undergraduate engineering students on the basis of merit. Students may receive the award for all four years contingent upon satisfactory progress toward graduation. Selection made by the College of Engineering.

**Rudolph and Dorothy Nolan Lux '49 Scholarship for Academic Excellence:** Income from endowment awarded annually to students in the sophomore, junior, or senior year, majoring in one of the engineering disciplines, on the basis of high academic achievement and financial need. Recipients selected by the dean of the College of Engineering.

**Charles A. Maguire and Associates Scholarship:** Income from endowment awarded annually to students in the field of engineering with financial need.

**Carleton Maine Scholarship:** Income from endowment for a scholarship awarded annually to a deserving student in environmental, civil, or related engineering specialties who is in need of financial assistance.

**Angelo A. Marcello Memorial Scholarship:** Income from endowment for a scholarship in civil engineering awarded annually to a junior or senior based on financial need with consideration given to academic excellence. Minimum award \$350; maximum, 50 percent of tuition. Selection made by the Department of Civil and Environmental Engineering.



**Arthur J. Minor Memorial Scholarship:** Income from endowment for a scholarship in engineering awarded annually to students with financial need.

**Vincent E. and Estelle E. Murphy Scholarship:** Income from endowment established in the memory of Vincent E. Murphy for a scholarship awarded annually to a student in the College of Engineering with financial need.

**John J. Murray Memorial Scholarship:** Income from endowment for a scholarship awarded annually in the College of Engineering based on academic merit.

**Vito A. Nacci Civil Engineering Scholarship:** Income from endowment awarded annually to a student in civil engineering.

**Henry J. Nardone Family Endowment:** Income from endowment awarded annually to a student in mechanical engineering. Preference will be given to an incoming freshman who graduated from a Rhode Island high school and has demonstrated financial need.

**Narragansett Improvement Company Scholarships:** Income from endowment for scholarships awarded annually to majors in civil and environmental engineering who are from Rhode Island. Recipients selected by the College of Engineering. Any specific criteria will be determined by the College of Engineering in conjunction with the Department of Civil and Environmental Engineering.

**Osram Sylvania Scholarship:** Annual award for a scholarship to assist students whose courses of study are in technical fields related to manufacturing.

**Charles Pagella Memorial Scholarship:** Income from endowment for an annual scholarship to engineering students.

**Piacitelli Family Scholarship:** Income from endowment awarded annually to provide in-state tuition and fees to a sophomore engineering major who is a Rhode Island resident. The Dean of the College of Engineering, in cooperation with the college's academic advisor, will work in concert with the donors to honor and fulfill the scholarship award and the donors' intentions on an annual basis.

**Grant H. Potter Memorial Scholarship:** Income from endowment, a bequest of Warren L. Potter, for scholarships to engineering students with financial need, with preference to residents of Rhode Island specializing in the field of electronics or aeronautics.

**Rhode Island Builders Association Scholarship:** Scholarship awarded on a three-year rotational basis to civil or environmental engineering students. Preference given to immediate family of R.I. Builders Association members. Recipients must be from Rhode Island, southeastern Massachusetts, or eastern Connecticut.

**Rhode Island Public Works Association Scholarship:** Income from endowment for a \$500 scholarship awarded annually to a junior who is a resident of Rhode Island with financial need and good academic standing who is majoring in civil engineering.

**Joseph G.A. Riccio Civil Engineering Scholarship:** Income from endowment awarded annually in civil engineering. Preference given to Bristol, R.I., residents who are members of Theta Delta Chi fraternity. Student must have good academic record and genuine financial need.

**\*Rose Family Scholarship:** Income from endowment for work study type awards to students who are obtaining practical experience in pollution prevention in the Department of Chemical Engineering. Recipient selected by the chair of the department.

**Halkey K. Ross '33 Scholarship:** Income from endowment awarded annually to a student in engineering on the basis of financial need and/or academic achievement.

**\*Dr. Herman E. Sheets Endowment for Ocean Engineering:** Income from endowment for scholarships and fellowships awarded annually to undergraduate and graduate students in the ocean engineering program. Recipients selected by the chairperson of the Department of Ocean Engineering.

**William F. and Pauline T. Silvia Endowment:** Income from endowment for a scholarship awarded annually to a student in the International Engineering Program in Spanish. Recipient selected by the faculty of the program.

**John L. Slocum Scholarship in Civil Engineering:** Income from endowment awarded to a deserving and worthy student in civil engineering.

**Dr. Malcolm L. Spaulding and Nicole Cornillon Scholarship in Ocean Engineering:** Income from endowment awarded annually to an undergraduate student in the ocean engineering program. Priority and preference given to students of outstanding scholastic merit and achievement, at the discretion of the chairperson of the Department of Ocean Engineering.

**Toray Plastics America, Inc., Scholarship:** Income from endowment for eight scholarships to students in engineering; specifically, in electrical, mechanical, or chemical engineering. Two scholarships will be awarded to children of Toray employees based on need and scholastic achievement. Two scholarships will be awarded to graduating seniors of North Kingstown High School, one based on need and the other on scholastic achievement. Two scholarships will be available to minority and women students who reside in Rhode Island, one based on need and the other on scholastic achievement. And two scholarships will be given to students who have demonstrated high scholastic achievement, one based on need and achievement and the other based solely on achievement.

**H. Winfield Tucker Jr. '43 Engineering Scholarship:** Income from endowment awarded annually to an undergraduate engineering student. Preference given to graduates of Washington County, R.I., high schools. Based on genuine financial need and academic performance.

**Royal Wales Scholarship:** Income from endowment awarded annually to a graduate of South Kingstown High School, in Wakefield, R.I., who is a full-time student at URI, meets minimum academic requirements, demonstrates satisfactory effort, and has demonstrated financial need. Preference given to a student enrolled in the College of Engineering. If there is no candidate from South Kingstown High School, the award will be given to a graduating senior from Rhode Island who meets, in order of preference, the above requirements.

**\*Milton Waltcher '41 Memorial Endowment:** Income from endowment for annual awards to go to a deserving chemistry graduate student during summer months and to a deserving undergraduate student in mechanical engineering.

**Wardwell Braiding Machine Company Scholarship:** Students majoring in engineering or computer science are eligible for \$1,000 awards each year until graduation, provided they maintain a grade point average of 3.0 starting in their freshman year. First preference to URI students from immediate families employed by Wardwell, second preference to students enrolled from Pawtucket or Central Falls, and third preference to students from the Blackstone Valley.

## Environment and Life Sciences

**Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Ruth E. Atkinson Endowed Scholarship:** Income from endowment for scholarships awarded annually to undergraduate students majoring in food science, textiles, or other substantially similar fields of study on the basis of academic merit and financial need.

**John W. Atwood Memorial Scholarship:** Income from endowment awarded annually to a junior or senior in an animal science program; students to be selected by a committee on the basis of financial need, academic performance, and interest. Selection made by the Department of Fisheries, Animal and Veterinary Science.

**Harriet G. Bird Memorial Scholarship (Merwin Memorial Free Clinic for Animals, Inc.):** \$1,000 awarded annually to Massachusetts residents with financial need who are majoring in animal science and technology and are interested in the welfare of animals.

**Barbara Bradford Brand '30 Scholarship:** Income from bequest awarded annually to an undergraduate student in the College of the Environment and Life Sciences interested in researching ways to accelerate protection of the environment.

**W. Berkley Carter Scholarship:** Income from endowment for scholarships awarded annually to students majoring in urban horticulture and turfgrass management.

**John Samuel Clapper Memorial Scholarship:** Income from endowment established by Orville O. Clapper in honor of his father, who pioneered the development of modern turf. Awards to outstanding juniors or seniors showing marked and abiding interest in turf culture. Selection made by the College of the Environment and Life Sciences.

**Dr. James W. and Mildred L. Cobble Memorial Scholarship:** Income from endowment awarded annually to a sophomore, junior, or senior in the College of the Environment and Life Sciences, based primarily on financial need accompanied by evidence of satisfactory progress toward a degree.

**College of the Environment and Life Sciences Scholarship for Academic Excellence:** Income from endowment for a scholarship in the College of the Environment and Life Sciences awarded annually on the basis of merit.

**Lloyd Robert Crandall Memorial Scholarship (Ashaway Line and Twine Manufacturing Company):** Income from endowment awarded annually to students in the aquaculture and fishery technology program with financial need. Selection made by the College of the Environment and Life Sciences.

**Alexander D. Daunis Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students of the fisheries and aquaculture technology program who are specializing in marine fisheries. Preference to upper-class students from the Northeast who are maintaining a 3.00 grade point average or better. Selection made by the Department of Fisheries and Animal Veterinary Sciences.

**Wayne King Durfee and Bernice Anderson Durfee Aquaculture Scholarships for Academic Excellence:** Income from endowment for a \$500 scholarship awarded annually to a junior or senior who has majored in aquaculture for at least one year; the recipient is selected on the basis of merit, as evidenced in the past academic year, with first preference given to a student with special interest in shellfish. Also, up to \$2,000 awarded to a graduate student based on merit, with special interest in shellfish.

**\*Marjorie Ellis Endowed Scholarship:** Income from endowment for scholarship to graduate or undergraduate students on the basis of financial need. Preference to students with an interest in nutrition and dietetics.

**Golf Course Superintendents Association of America Scholarships:** These \$500 competitive scholarships are awarded nationally on the basis of scholastic ability, professed interest in golf turf management, and recommendation of advisors. Selection made by the turf section of the Department of Plant Sciences.

**Mabel B. Goshdigian Memorial Scholarship for Academic Excellence in Dietetics:** Income from endowment awarded annually to a dietetics major on the basis of merit.

**Morton and Ruth Grossman Endowment:** Income from endowment awarded annually to students studying for the profession of turfgrass management. Recipient will be selected by faculty in the Department of Plant Sciences who serve as advisors to students majoring in urban horticulture and turfgrass management.

**Hardee's Scholarship for Academic Excellence:** Income from endowment for two scholarships awarded annually to students in the College of the Environment and Life Sciences on the basis of merit. Recipients selected by a committee of faculty representing all academic departments in the college and the director of Student Financial Assistance and Employment Services.

**\*Arthur D. Jeffrey Memorial Scholarship:** Income from endowment awarded to a graduate student in community planning with financial need.

**Cedric C. Jennings '37 Memorial Endowment:** Income from endowment awarded annually to students with financial need who are studying entomology or plant pathology. Selection made by the plant pathology and entomology section of the Department of Plant Sciences.

**Kingston Hill Gardeners Endowment:** Income from endowment awarded annually to a junior or senior majoring in the area of plant studies on the basis of academic merit and interest.

**John M. Lawrence III Memorial Scholarship:** Income from endowment will be used for a scholarship awarded annually in the Department of Natural Resources Science. Recipient selected by the department.

**Alice P. Mayer Scholarship:** Two annual scholarships of \$1,500 each to students interested in agriculture, horticulture, or fishery technology who reside in Newport County. Preference to juniors and seniors. Selection made by the College of the Environment and Life Sciences.

**William S. Moody III Memorial Endowment:** Income from endowment awarded for four years to an undergraduate in the College of the Environment and Life Sciences. The recipient(s) will be selected by the dean of the college on the basis of academic merit and interest in environmental issues and studies. Established in the memory of William S. Moody III, this endowment was donated by Mr. and Mrs. William S. Moody Jr., his parents, and Mrs. William S. Moody, his widow.

**Charles E. Olney Food Science Scholarship:** Income from endowment for a scholarship awarded annually on the basis of merit and need to an undergraduate student majoring in food science and nutrition and committed to a career in food science. Recipient selected by a committee headed by Dr. Chong Lee from the Department of Food Science and Nutrition.

**Al Owens Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of the Environment and Life Sciences on the basis of merit.

**Jean Louise Pimental '70 Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a deserving student in animal science with preference to a woman from Rhode Island. Selection made by the College of the Environment and Life Sciences.

**John E. Powell Memorial Scholarship:** Income from endowment awarded annually to juniors or seniors in resource development on the basis of worthiness and need. Selection made by the College of the Environment and Life Sciences.

**Providence Gas Environmental Scholarship:** Awarded to students preparing for careers in environmental management and residing in the household of a Providence Gas customer.

**Anna and Silvio Quattrini Memorial Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student in the College of the Environment and Life Sciences. Preference given to a native Rhode Islander with financial need.

**Ralston-Purina Award:** A \$650 award to an outstanding student with professional interest in food science. Selection is based on scholarship, leadership, character, citizenship, potential, and need. Selection by Ralston-Purina from applications recommended by the college.

**Rhode Island Dietetic Association Scholarship:** Income from endowment for scholarships awarded annually to seniors majoring in nutrition and dietetics who are Rhode Island residents, on the basis of financial need, academic performance, and interest, effort, and commitment to pursuing a career in dietetics.

**Rhode Island Golf Course Superintendents Association Scholarship:** \$200 awarded annually to a student studying for the profession of turfgrass management who has an expressed interest in golf course maintenance. Selection made by the turf section of the Department of Plant Sciences.

**Rhode Island Nurserymen's Association Scholarship:** \$150 awarded annually to a student who has completed at least five of the eight professional courses specified in ornamental horticulture and has attained the highest cumulative quality point average. Recipient selected by associate dean for instruction. Award presented at the association's spring meeting.

**Betty and Tom Shreve '42 Scholarship:** Income from endowment awarded annually for a food science and nutrition major on the basis of financial need.

**Dr. Richard S. Skogley Scholarship Endowment:** Income from endowment for a scholarship in the area of turfgrass management in the Department of Plant Sciences. Recipient selected by the Department of Plant Sciences.

**Society of Soil Scientists of Southern New England Scholarship:** Awarded to a student majoring in soil science on the basis of scholarship, extracurricular activities, character, and need. The recipient must have completed six credits in soil science.

**Southern Rhode Island Soil Conservation District Scholarship:** \$500 awarded to a junior or senior with professional interest in soil conservation or a related area. Selection made by a committee of soils faculty and district representatives, based on scholarship, experience in soil science, extracurricular activities, character, and attitude.

**Karen Volk and Richard Volk Jr. Memorial Scholarship:** Income from endowment awarded annually on the basis of need and merit to a freshman majoring in animal science.

**Wantaknowhow Garden Club:** Scholarship awarded annually to a student in resource development.

**Watershed Watch Scholarship:** Income from endowment for a scholarship awarded annually to students in the Department of Natural Resources Science. Recipient must be in good academic standing, have demonstrated financial need, and be a major in natural resources science.

## Human Science and Services

**Kathryn Beaupre Department of Communicative Disorders Scholarship:** Income from endowment for a scholarship awarded annually to students in the Department of Communicative Disorders on the basis of academic qualification, with a preference for financial need.

**\*George H. and Mary Kulik Bond Endowed Scholarship:** Income from endowment for scholarship awarded annually on the basis of financial need.

**Glenn C. Brown Dental Hygiene Scholarship:** Income from endowment awarded annually in the clinical second semester to a junior or senior with good academic performance. Genuine financial need may also be considered. Selection made by the Department of Dental Hygiene.

**Elizabeth W. Christopher Memorial Scholarship:** Income from endowment awarded annually, to students in home economics who have completed their fourth semester at the University, on the basis of scholarship and evidence of potential service and concern for the welfare of others. Selection made by the College of Human Science and Services.

**Ruth E. Curran Scholarship:** Income from endowment awarded annually to a worthy student in home economics. Selection made by the College of Human Science and Services.

**Edward D. Eddy Memorial Scholarship:** Income from endowment for a scholarship awarded annually to junior-year students majoring in education who are graduates of Providence public schools and who want to teach in urban schools. Selection made by the School of Education.

**Joan '86, Jennifer, and Melissa Heaton Memorial Scholarship:** Income from endowment awarded annually to students in the human services disciplines. Selection made by the College of Human Science and Services.

**Helen Gibbs Lea Scholarship:** Income from endowment for a scholarship awarded annually to an Alpha Chi Omega. First preference to a member majoring in primary education, second preference to a member majoring in any education major.

**\*Dr. Dorothy Massey Scholarship:** Income from endowment for women graduate and undergraduate students majoring in physical education.

**Mabel Streeter Perrin Scholarship:** Income from endowment for scholarships awarded annually to Rhode Island female students majoring in human development and family studies on the basis of academic standing and financial need.

**\*Dr. and Mrs. James P. Reid Scholarship:** Income from endowment for a scholarship in physical education awarded annually to a master's or doctoral student on the basis of academic scholarship, professional interest, and involvement. Preference to second-year students. Selection made by the Reid Scholarship Committee of the Department of Physical Education.

**Andrew W. Rotelli III Memorial Scholarship:** Income from endowment for a scholarship awarded annually to needy students who had formerly attended Bishop Hendricken, are enrolled in the physical education program, and are seeking a career in sports-related physiology or in physical therapy.

**Jill Sawyer Memorial Scholarship:** Income from endowment for a scholarship in merchandising or fashion design awarded annually to a sophomore, junior, or senior on the basis of financial need. Preference given to members of Alpha Xi Delta sorority.

**Lt. Charles Yaghoobian Jr. '65 Memorial Scholarship:** Income from endowment available to a student with financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley regardless of major.

## Nursing

**Paul and Marcia Bigney Scholarship:** Income from endowment for a scholarship awarded annually to a registered nurse in either the College of Nursing's undergraduate or graduate program who shows dedication to a career in nursing. Preference given to students specializing in hospice, home care, oncology, or cardiac nursing.

**Emilie C. '16 and Norman H. Borden '15 Nursing Scholarship:** Income from endowment awarded annually to a nursing student with financial need.

**M. Adelaide Briggs Memorial Scholarship:** Income from endowment available to nursing students with financial need.

**Godfrey Brown Leadership Scholarship:** Income from endowment for an annual award to a graduating senior in nursing who demonstrates leadership skills and professionalism in clinical practice. Selection made by the College of Nursing.

**Vera J. Clark Scholarship in Nursing:** Income from endowment for scholarships awarded annually to students in the College of Nursing from Westerly or Richmond who are both worthy and needy.

**College of Nursing Scholarship:** Awarded to undergraduate students majoring in nursing. The grant will be administered by Student Financial Assistance and Employment Services.

**Joseph D'Anna Scholarship:** Income from endowment for scholarships awarded annually in nursing.

**James '76 and Nancy '77 Forte Scholarship in Business and Nursing:** Income from endowment for scholarships awarded annually in the College of Business Administration and the College of Nursing.

**Giuseppina and Mariano Galanti Nursing Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing. Selection made by the College of Nursing.

**\*Joseph Galanti Scholarship:** Income from endowment for a scholarship awarded annually in nursing.

**Mildred J. Galanti Scholarship:** Income from endowment for a scholarship in nursing.

**Morton and Ruth Grossman Scholarship:** Income from endowment for a scholarship awarded annually in the College of Nursing. Recipient selected by the College of Nursing.

**Kenneth and Susan Kermes Scholarship:** Income from endowment for scholarships awarded annually to undergraduate students in nursing on the basis of good academic standing and financial need.

**Oscar and Lauretta LaPierre Memorial Scholarship:** Income from endowment for a four-year scholarship to a student in the College of Nursing who is from Central Falls, R.I., and has demonstrated financial need.

**Gladys N. Longo Scholarship in Nursing:** Income from endowment for a scholarship awarded to a fourth-year nursing student entering the fifth year on the basis of financial need.

**Marie D. Radoccia Endowed Nursing Scholarship:** Income from endowment awarded annually to a student enrolled in the College of Nursing on the basis of academic achievement and financial need. First preference to a graduate of Richmond Elementary School.

**Roddy Charitable Trust Scholarship:** Income from endowment available to students in the College of Nursing on the basis of financial need and academic ability.

**Sigma Theta Tau, Inc., Delta Upsilon Chapter Scholarship:** A \$750 grant awarded annually to a full-time student in the College of Nursing who has completed two or more clinical nursing courses on the basis of grade point average, evidence of leadership, creativity, professional commitment, and financial need. Application forms available at the College of Nursing.

**Ella Soloveitzik '37 Memorial Scholarship:** Income from endowment awarded annually to worthy nursing students or students pursuing a teaching career. First preference to students from the South County and Pawcatuck areas.

**Catherine H. Suda/Edward S. Pratt Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing. First preference to students from North Kingstown; second, Washington County; third, Rhode Island; and fourth, other qualified students. Recipient selected by the dean of the College of Nursing.

**\*Barbara Tate Scholarship in Nursing:** Income from endowment awarded annually to undergraduate or graduate nursing students in good academic standing. Award based on clinical competence. Applications available at the College of Nursing.

**Frederick '22 and Doris Louise Titchener Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing with financial need.

**Esther A. Watson Memorial Scholarship:** Income from endowment for a scholarship in nursing awarded annually on the basis of good scholastic standing, with first preference given to graduates of the Memorial Hospital School of Nursing; second preference to relatives of such graduates. Selection made by the College of Nursing.

**Louisa White Scholarship Endowment:** Income from endowment available for a scholarship to needy nursing students at the request of the dean of the College of Nursing.

## Oceanography

**\*Davis Family Endowment for Fisheries Oceanography:** Income from endowment for the Joshua MacMillan Graduate Fellowship in Fisheries Oceanography awarded annually on the basis of financial need to master's or doctoral students at the Graduate School of Oceanography with a marked interest in research related to fisheries science. Recipient selected by GSO.

**\*Farmer Family Trust—The Pacifico A. Colicci Award in Oceanography Engineering:** Income from endowment for an annual award to a student in the Graduate School of Oceanography who demonstrates exceptional vision and creativity in fashioning instruments for use in oceanography research.

**\*Farmer Family Trust—The Henry S. Farmer Award in Biological Oceanography:** Income from endowment for an annual award to a student in biological oceanography who demonstrates exceptional creativity and interest in research designed to preserve and develop the oceans as a biological resource.

**\*Robert H. '35 and Marjorie P. Fillmore '36 Memorial Scholarship:** Income from endowment, established by Judith Ann Fillmore in memory of her mother and father, awarded annually to an undergraduate or graduate student on the basis of good scholastic standing, who demonstrates financial need and is enrolled in an ocean science program. First consideration is given to sons and daughters of the URI Washington Alumni Club, Washington, D.C.

**\*Friends of Oceanography Fellowship:** Awarded to new oceanography students on the basis of need and merit.

**\*Graduate School of Oceanography Alumni Endowment:** Income from endowment awarded annually to a Graduate School of Oceanography student on the basis of scientific proposals. Selection made by the GSO Alumni Committee.

**\*Graduate School of Oceanography Alumni Fellowship:** Award provides fellowship support, based on academic record and proposed scientific research, for master's or doctoral students in any field of oceanography.

**\*Greenwich Bay Power Squadron and Women's Auxiliary Award:** Awarded annually to a graduate student in biological oceanography.

**\*Robert L. McMaster Scholarship in Marine Geology:** Income from endowment for a scholarship in marine geology awarded annually to a graduate student on the basis of academic performance, dedication to teaching, and modesty. Recipient selected by the Graduate School of Oceanography.

**\*Thomas and Kathy J. McNiff Endowment:** Income from endowment for a scholarship awarded annually to a graduate student in the marine sciences. Selection made by the Graduate School of Oceanography.

**\*Narragansett Electric Coastal Institute Fellowship:** Award provides fellowship support for a Ph.D. student in oceanography whose research interest is in coastal studies.

**\*Lance A. Ricci Fellowship:** Income from endowment awarded annually to a financially deserving graduate student in the Graduate School of Oceanography. Recipients selected by the Graduate School and the Graduate School of Oceanography.

**\*Ada L. Sawyer Endowment for Oceanography:** Income from endowment awarded annually to an M.S. or Ph.D. student in oceanography on the basis of financial need and/or merit. Recipient must be born in the United States and be in good standing with the University. Preference given to a woman demonstrating the spirit and ingenuity of Ada L. Sawyer.

**\*Webb Family Graduate Fellowship in Oceanography:** Income from endowment awarded annually to a master's or doctoral student in the Graduate School of Oceanography on the basis of genuine financial need and/or merit. The recipient is selected by the dean of the Graduate School of Oceanography.

## Pharmacy

**Brooks Maxi Drugs Scholarship:** Grant awarded annually to students in the College of Pharmacy. Recipients selected by the dean of the college.

**Norman A. and Mary Campbell Scholarship:** Income from endowment for a scholarship awarded annually to pharmacy students in the professional curriculum who demonstrate academic proficiency and leadership in pharmacy student organizations.

**Dr. Herb Carlin Scholarship:** Income from endowment for a scholarship in pharmacy. Selection made by the College of Pharmacy.

**\*Dr. Young Soo Choi Scholarship in Pharmacy:** Income from endowment for scholarship to a graduate student in the Department of Pharmacology on the basis of financial need. Preference to international students. Recipient selected by Student Financial Assistance and Employment Services and the College of Pharmacy.

**Harriet A.F. Claflin Scholarship:** Income from endowment awarded to students in pharmacy with financial need.

**Sidney Cohn Memorial Scholarship:** Income from bequest awarded to a student in pharmacy with financial need. Selection made by the College of Pharmacy.

**\*College of Pharmacy Centennial Student Endowment:** Income from endowment for a scholarship awarded annually in pharmacy. Recipient selected by the College of Pharmacy.

**\*College of Pharmacy Graduate and Undergraduate Memorial Scholarship:** Income from endowment for a scholarship awarded annually in the field of pharmacy on the basis of merit. Recipient selected by the College of Pharmacy.

**College of Pharmacy Scholarship:** Income from endowment for scholarships in pharmacy awarded annually on the basis of financial need and, second, academic achievement. Selection made by the College of Pharmacy.

**CVS Awards:** Three \$500 awards to students who are in their fourth or fifth year with satisfactory academic standing, financial need, and interest in a career in retail (community) pharmacy, with high preference to children of CVS employees. Selection made by the College of Pharmacy.

**CVS Endowment Scholarship:** Income from endowment for scholarships in pharmacy awarded annually to deserving students. Recipients selected by the dean of the College of Pharmacy.

**Davol Company Pharmacy Scholarship:** Income from endowment for a scholarship in pharmacy.

**David R. DeFanti Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in pharmacy.

**Hyman Fradin Scholarship Endowment:** Income from endowment awarded annually to a minority student from Rhode Island with financial need and a successful academic record (3.00 grade point average and above). First preference will be given to a student wishing to major in pharmacy; if that is not possible, the support will go to a deserving student in any academic field. The recipient must also have demonstrated leadership in nonacademic settings.

**\*William John and Joseph E. Golini Scholarship in Pharmacy:** Income from endowment for stipends awarded annually to graduate students in pharmacy. Recipients selected by the dean of the College of Pharmacy.

**Florence Champlin Hamilton Memorial Scholarship:** Income from endowment awarded annually to a student in pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

**Hannaford Brothers Co. Scholarship:** Scholarship awarded annually to a student in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Edward M. Lee Scholarship Endowment:** Income from endowment awarded annually to pharmacy students from the Woonsocket and North Smithfield areas. Selection made by the College of Pharmacy.

**Gladys N. Longo Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy on the basis of financial need.

**National Association of Chain Drug Stores, Inc. Scholarship:** Annual grant for scholarships for pharmacy students on the basis of satisfactory academic standing, financial need, and career interest in community pharmacy practice. Selection made by the College of Pharmacy.

**\*Joseph F. and Josephine D. Navach Scholarship:** Income from endowment awarded annually to a pharmacy student in good standing with genuine financial need. Preference to a graduate of a Rhode Island high school. Funded through the generous contribution of Josephine Delise Navach '34 and the late Joseph F. Navach '34. Selection by the College of Pharmacy in conjunction with Student Financial Assistance.

**Gertrude I. and Henry Nelson Jr. Memorial Scholarship:** Income from endowment awarded annually to a student in pharmacy with financial need.

**William G. Peckham Memorial Scholarship:** Established by the will of Mary M. Peckham (Mrs. William G.), the scholarship provides funds to a first-year student enrolled in pharmacy and continues until graduation if merited by scholastic performance. Selection made by the College of Pharmacy.

**Rhode Island Pharmaceutical Association Award:** \$300 awarded annually to an upperclass student in the College of Pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

**Rhode Island Pharmaceutical Association Scholarship Endowment:** Income from endowment for a scholarship in pharmacy awarded annually on the basis of financial need to third-, fourth-, or fifth-year students.

**Rite Aid Corporation Scholarship:** Grant awarded annually to students in the College of Pharmacy.

**Schwan Scholarship in Pharmacy:** Annual grant to a pharmacy student whose interest is in research. Recipient selected by the dean of the College of Pharmacy.

**Southeastern Massachusetts Pharmaceutical Association Scholarship:** Income from endowment for a scholarship awarded annually to a third-, fourth-, or fifth-year pharmacy student from southeastern Massachusetts. Priority to scholastic excellence above financial need. Selection made by the College of Pharmacy.

**Stop & Shop Company Scholarship:** Scholarship awarded annually to a student in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Mary C. Tafuri Memorial Scholarship:** Income from endowment awarded annually to a pharmacy student interested in the practice of community pharmacy.

**Walter B. Thompson Memorial Scholarship:** Income from endowment for a scholarship in pharmacy awarded annually to a deserving student. Selection made by the College of Pharmacy.

**Daniel P.N. Tsao Memorial Scholarship:** Income from endowment awarded annually to a pharmacy student.

**URI Class of 1926 Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy. Recipient selected by the dean of the College of Pharmacy and Student Financial Assistance and Employment Services.

**Lois Vars Scholarship:** Income from endowment for a scholarship awarded annually in the fall to a female pharmacy student who is a transfer in her third year and is at least 28 years old.

**Walgreen Award:** Scholarship awarded to a deserving student in or at completion of the first professional year.

**Wal-Mart Pharmacy Scholarship:** Grant awarded annually to students in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Leonard R. Worthen Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy.

**Heber W. Youngken Jr. Scholarship:** Income from endowment awarded annually to a student in the fourth- or fifth-year class who has demonstrated outstanding service in the interests of pharmacy at the state and/or national level. Recipient selected by the College of Pharmacy.

**Kevin J. Zecco Memorial Scholarship:** Income from endowment for a scholarship awarded annually to fourth-year students in the College of Pharmacy with an academic average of 2.50 to 3.50 and demonstrated financial need. The student must be of good moral character and have the persistence and dedication to pursue an entry-level degree in pharmacy. Recipient selected by the dean of the College of Pharmacy and Student Financial Assistance and Employment Services.

## SPECIAL AWARDS

**\*Academy of American Poets Prize:** Income from the Nancy Potter Endowment for two \$100 prizes to be awarded each year by the Academy of American Poets.

**Dennis W. Callaghan Memorial Award in Management:** Income from endowment awarded annually to the outstanding senior in management. Selection made by the College of Business Administration.

**Dr. David J. Chronley Fund in Chemical Engineering:** Income from endowment for annual creativity awards for junior or senior undergraduate students in chemical engineering. Awarded at the discretion of the department chairperson.

**\*James Corless Prize in Marine Chemistry:** Income from endowment for an award in water chemistry given annually if there is a worthy student.

**Lt. Parker D. Cramer '59 Memorial Endowment:** Income from endowment for an annual award (a saber) to outstanding students in Reserve Officers Training Corps (ROTC) having leadership qualities and high ethical standards. Selection made by the Department of Military Science.

**\*Ann Durbin Memorial Endowment:** Income from endowment for an award to a graduate student, either master's or Ph.D. candidate, in biological oceanography. Recipient selected by the Graduate School of Oceanography.

**\*John J. Fisher Memorial Award:** Income from endowment for an annual award in geology to a graduate assistant (either teaching or research) who has demonstrated superior service to the Department of Geology during the current academic year while maintaining a strong academic record.

**John B. Fraleigh Prizes in Mathematics:** Income from endowment for prizes awarded annually to undergraduates for excellence in mathematics. Selection made by the Department of Mathematics.

**Peter M. and Mildred J. Galanti Award:** Income from endowment for an award given annually to a deserving student in business administration.

**Elizabeth Holmes Outstanding Athlete Award:** Income from endowment for two awards presented annually to outstanding athletes, one male and one female, who possess good academic averages and exemplify the character, sportsmanship, and distinguished qualities URI desires in its athletes. Recipients selected from recommendations made by coaches, with final selection made by the Holmes family.

**Joseph Waite Ince Prize in Chemistry:** Income from endowment for a prize awarded annually to the most accomplished and promising chemistry student.

**David Ketner Memorial Prize:** Income from endowment for prize(s) to art students established in the memory of David D. Ketner, former URI professor of art.

**Dr. Nicholas Locascio Prizes in Italian:** Income from endowment for prizes in Italian. Recipient selected by the Italian section of the Department of Modern and Classical Languages and Literatures.

**\*Peter Merenda Prize for Excellence in Statistics and Research Methodology:** \$1,500 to a finishing Ph.D. student in the Department of Psychology for excellent academic performance.

**William D. and Clarice Metz Scholarship:** Income from endowment for an award given annually to a graduating senior for excellence in history.

**\*L. Douglas Nolan '52 Academic Achievement Award in Science:** Income from endowment for awards given annually to worthy graduate students who excel in one of the natural, physical, biological, agricultural, oceanographic, veterinary, or medical sciences. Selection made by the dean of the Graduate School.

**\*William C. Potter Prizes in Chemistry:** Income from endowment for an award given annually to Ph.D. students in pharmacy on the basis of academic achievement in chemistry.

**Rhode Island Association of Advertising Agencies Award:** Income from endowment for an award to outstanding advertising and/or marketing students in the College of Business Administration.

**Rhode Island Nurserymen's Association Award:** \$150 awarded annually to a student in an advanced course in landscape design who attains the highest score in competitive examination in plant identification. Award presented at the association's annual spring meeting. Selection made by the College of the Environment and Life Sciences.

**Rhode Island Tuberculosis and Respiratory Disease Association Award:** \$1,000 awarded annually in honor of the association's former president, Harry L. Gardner, to a senior accepted by an accredited medical school. Based on need. Apply to chairperson of the Premedical Advisory Committee.

**Italo and Mary Ronzio Award:** Income from endowment for an award in Italian language studies.

**Dr. Grace B. Sherrer Honors Awards:** Income from endowment for prizes awarded annually to outstanding undergraduates enrolled in the Honors Program.

**Leonard Eckerman Smith Memorial Award in Public Speaking:** Income from endowment awarded to students at the University with a major interest in public speaking, based on excellence in public speaking.

**A. Ralph Thompson Award in Chemical Engineering:** Income from endowment for an annual award to the student in chemical engineering who demonstrates the greatest increase in quality point average from the end of the freshman year to the end of the junior year.

**\*Norman Watkins Memorial Award:** Income from endowment for an annual award in physical oceanography. Recipients selected by the Graduate School of Oceanography.

**Richard Dawson Wood Memorial Award for Excellence in Biological Sciences:** Income from endowment awarded on the basis of scholarship, character, academic integrity, and intellectual enthusiasm to a senior entering graduate studies in biological sciences. In addition, an independent research paper on a project previously discussed with a faculty member in biological sciences must be submitted by April 30 of the senior year.

**Dr. Barbara Allen Woods Memorial Award for Excellence in German Studies:** Students selected by faculty members in the German section of the Department of Modern and Classical Languages and Literatures.

# INDEX

- Academic and Social Codes, 10  
Accounting, 69, 119, 153  
Accreditation, 9  
Adding Courses: *See* Drop and Add  
Address, Change of, 27  
Admission Requirements: Undergraduate, 28, 76;  
    Graduate, 112  
Admissions Inquiry Line, 29  
Adult and Extension Education, 155  
Adult Education, 129  
Advanced Standing: for Undergraduates, 30; for  
    Graduate Students, 113  
Affirmative Action, 10  
African and African-American Studies, 34, 50, 155  
AIDS: *See* Affirmative Action  
Animal and Veterinary Science, 155: *See* Fisheries,  
    Animal and Veterinary Science  
Animal Science and Technology, 90  
Anthropology, 50, 156  
Application for Financial Aid, 23  
Application Procedures: for Undergraduates, 29, 76;  
    for Graduate Students, 112  
Applied Communications Major, 74  
Applied Mathematical Sciences, 120, 157  
Applied Pharmaceutical Sciences, 120, 157  
Applied Sociology: *See* Sociology  
Aquacultural Science and Pathology: *See* Fisheries,  
    Animal and Veterinary Science  
Aquaculture and Fisheries Science, 159  
Aquaculture and Fishery Technology, 90  
Army Reserve Officers Training Corps (ROTC), 42, 59  
Art, 161  
Art History, 50, 163  
Art Studio, 51  
Arts and Sciences, College of, 47  
Assistantships, Graduate, 26  
Astronomy, 163  
Audiology: *See* Speech-Language Pathology and  
    Audiology  
Auditing, 27
- Bachelor of Arts Degrees, 6  
Bachelor of Fine Arts, 49, 51, 66  
Bachelor of General Studies, 73, 163  
Bachelor of Music, 50  
Bachelor of Sciences degrees, 6  
Basic Liberal Studies Requirements, 47, 48  
Biochemistry, 163  
Biological Sciences, 51, 121, 165  
Biology, 34, 51: *See also* Biological Sciences  
Biomedical Engineering, 78  
Biomedical Sciences, 169: *See also* Medicinal  
    Chemistry; Pharmacognosy; Pharmacology and  
    Toxicology  
Business, 35, 170  
Business Administration, 122  
Business Administration, College of, 68  
Business Analysis and Computing, 171  
Business and Finance, Office of, 288  
Business Institutions Major, 75  
Business Law, 171  
Business Minor for Nonbusiness Students, 69
- Calendar, University, 3  
Calendar for Graduate Degree Candidates, 114  
Campus Map, 324  
Campus Tours, 29  
Campuses, 4  
Capstone Experiences, 33  
Career Services, 14  
Cell and Molecular Biology, 123  
Certification in Family Financial Counseling, 103  
Certification, Teacher: *See* Teacher Certification  
Change of Address, 27  
Chaplains, University, 14  
Chemical Engineering, 79, 124, 171  
Chemistry, 53, 124, 173  
Chemistry and Chemical Oceanography, 54  
Child Development Center, 99  
Chinese, 175  
Civil and Environmental Engineering, 81, 125, 176  
Classical Studies, 54  
Classics, 179  
Clearinghouse for Volunteers, 41  
CLEP Examination Program, 30  
Clinical Laboratory Science, 91, 126  
Coastal and Marine Policy, 92  
College Level Examination Program (CLEP), 30  
Colleges: Arts and Sciences, 47; Business  
    Administration, 68; Continuing Education, 73;  
    Engineering, 77; Environment and Life Sciences,  
    89; Human Science and Services, 99; Nursing,  
    107; Pharmacy, 109  
Communication Studies, 54, 126, 179  
Communicative Disorders, 100, 181  
Community Planning, 126, 182  
Community Service, 184  
Comparative Literature Studies, 34, 55, 185  
Computational Services: *See* Information Services  
Computer Engineering, 82  
Computer Science, 55, 128, 185  
Confidentiality of Student Records, 17  
Consumer Affairs, 34, 35, 101
- Continuing Education, Alan Shawn Feinstein College,  
    73  
Continuing Education, Feinstein College of, 5  
Continuous Registration, Graduate, 20, 114  
Cooperative Education (Co-op), 78  
Cornerstones, 10  
Counseling, 14  
Course Codes, 154  
Course Numbering System, 116, 153  
Course Sponsorship, 18  
Credit Overload Fee, 20  
Culture Cluster, 33
- Dean's List, 43  
Degree Requirements (General): Undergraduate, 32;  
    Graduate, 117  
Degrees, List of, 6  
Dental Hygiene, 101, 186  
Dietetic Internship Certificate Program, 144  
Dietetics: *See* Nutrition and Dietetics  
Dining Services, 11, 22  
Disabilities Services, 10, 13  
Discipline System, University, 14  
Dismissal and Probation, 43  
Dissertations and Theses, 118  
Doctor of Philosophy Degree Requirements, 117  
"Down-the-Line," Commuting from, 12  
Drop and Add, 27
- Early Childhood Education, 103, 152  
Early Enrollment for Undergraduates, 29  
Economics, 56, 187: *See also* Environmental and  
    Natural Resource Economics; Resource Economics  
Education, 101, 129, 188  
Electrical Engineering, 83, 130, 195  
Elementary Education, 129, 152  
"Emancipated Students", 18  
Employment, Student, 25  
Engineering, 77, 196  
Engineering, College of, 77  
Engineering and M.B.A., 78  
English, 56, 130, 196  
English as a Second or Foreign Language, 40  
English Language Studies, 199  
Enrollment Services, 3, 18, 27  
Enrollment Summary, 321  
Enrollment Deposit, 20  
Entomology, 133, 201  
Entrance Tests, 29  
Environment and Life Sciences, College of, 89

Environmental and Natural Resource Economics,  
131: *See also* Resource Economics  
Environmental Economics and Management, 92  
Environmental Plant Biology, 52, 93: *See also*  
Biological Sciences  
Environmental Science and Management, 93, 132  
Environmental Sciences, 202  
Examinations, Professional: *See* Counseling  
Exchange Programs, 41, 42  
Exercise Science, 202: *See also* Physical Education/  
Exercise Science  
Experimental Statistics: *See* Statistics

Faculty Emeriti, Listing of, 288  
Faculty Senate, 9  
Failures: *See* Grades and Points  
Family Financial Counseling and Planning, 99, 103  
Family Therapy Clinic, 99  
Federal Aid to Students, 24  
Fees, 19, 20  
Feinstein Center for Service Learning/OIEE, 40  
Fellowships, Graduate, 26  
Film Studies, 34, 35, 201  
Finance, 69, 201: *See also* Business Administration  
Financial Aid, 22  
Financial Services, 70  
Fine Arts, 49  
Fisheries, Animal and Veterinary Science, 133  
Forensic Science, 35  
Foundation, URI, 9  
Fraternities and Sororities, 12  
French, 202  
Full-Time Students, 18, 115

General Business Administration, 35, 70  
General Education Requirements, 32  
Genetics, 203  
Geography, 204: *See* Marine Affairs  
Geology, 133  
Geology and Geological Oceanography, 93  
Geosciences, 93, 204  
German, 57, 205  
Gerontology, 35, 206  
Grades and Points, 42  
Graduate Council, 9  
Graduate Degrees, List of, 6  
Graduate Programs, 5, 119  
Graduate School of Oceanography, 5  
Graduate Student Association, 13  
Graduation Fee, 20  
Graduation Requirements: Undergraduates, 44;  
Graduate, 117  
Grants, 24, 25  
Greek, 206

Health Profession Programs, 39  
Health Professions Student Loan Program, 24  
Health Questionnaire, 31  
Health Services, 15, 19  
Health Services Administration, 206  
Health Services Administration Major, 75  
Hebrew, 206  
Historic Textile and Costume Collection, 99  
History, 57, 134, 207  
History of the University, 5  
Honor Societies, 16  
Honors Program, 41, 210  
Housing: Undergraduate, 11; Graduate, 12  
Housing Fees, 21  
Human Development and Family Studies, 103, 135,  
211  
Human Science and Services, 104, 214  
Human Science and Services, College of, 99  
Human Studies Major, 75  
Hunger Studies, 35

ID Card, 10  
Identification, Required, 10, 27  
Immunizations, Required, 31  
Incomplete: *See* Grades and Points  
Indebtedness to the University, 22  
Independent Students, 12  
Industrial and Manufacturing Engineering, 84, 138,  
215  
Information Services, 7  
Instructional Development Program, 9  
Insurance, 217  
Insurance, Accident/Sickness, 20  
Integrated Computer Engineering Design, 82  
Intellectual Opportunity Plan (Pass-Fail Option), 115  
Interdepartmental Study, 34  
International Baccalaureate Degree Program, 30  
International Business, 69, 70  
International Development, 35  
International Engineering, 78  
International Students, 13, 112  
International Teaching Assistants, 13  
Internships and Experiential Education, 41, 217  
Interstate Cooperative Program: *See* New England  
Regional Student Program  
Interviews for Undergraduate Admission, 29  
Italian, 57, 217

Japanese, 218  
Jones Campus, 5  
Journalism, 57, 218  
Justice, Law, and Society, Minor in, 36

Labor Relations and Human Resources, 135, 136,  
219  
Labor Studies, 36  
Landscape Architecture, 95, 220  
Languages, 220  
Late Fees and Special Fees, 21  
Late Payment Fee, 21  
Late Registration Fee, 21  
Latin, 221  
Latin American Studies, 58, 221  
Leadership Studies, 36  
Learning Assistance Center, 15  
Leave of Absence, 43  
Letters, 221  
Libraries, University, 7  
Library, 221  
Library and Information Studies, 137, 221  
Lifestyles, 11  
Linguistics, 58, 223  
Literature in English Translation, 225  
Loans, 24, 25  
  
Management, 71, 226: *See also* Business Administra-  
tion  
Management Information Systems, 71, 226  
Management Science, 226  
Manufacturing and Industrial Engineering, 84, 138  
Marine Affairs, 139, 227: *See also* Coastal and Marine  
Policy  
Marine and Environmental Topics, 229  
Marine Biology, 53: *See also* Biological Sciences  
Marine Resource Development, 95  
Marketing, 72, 231: *See also* Business Administration  
Master's Degree Requirements (General), 117  
Masters in Business Administration, 232  
Mathematics, 59, 140, 233  
Matriculated Students, 18  
Meal Plans, 21  
Mechanical Engineering and Applied Mechanics, 85,  
140, 235  
Medical Services: *See* Health Services  
Medical Technology, 238: *See also* Clinical  
Laboratory Science  
Medicinal Chemistry, 141  
Memorial Union, 14  
Microbiology, 95, 141, 239  
Microcomputer Laboratory, 99  
Military Science, 241  
Military Science (Army ROTC), 59  
Minor Fields of Study, 33  
Minority Students: *See* Talent Development  
Mission Statement, 4  
Modern and Classical Languages and Literatures, 59  
Monthly Payment Plan, 21



- Multicultural Students, 12  
 Music, 50, 60, 141, 241  
 Music Education, 61, 152  
 Music Fees, Applied, 20
- Narragansett Bay Campus, 5  
 National Sea Grant Depository, 7  
 National Student Exchange Program, 41  
 Natural Resources Science, 132, 245  
 New England Land-Grant Student Exchange Program, 41  
 New England Regional Student Program, 31  
 New England Studies, 36, 247  
 Nondiscrimination, 10  
 Nonmatriculated Students, 18, 27, 113  
 Nonresident Students, 18  
 Notice of Change, 10  
 Nursing, 142, 249  
 Nursing, College of, 107  
 Nursing Student Loan Program, 24  
 Nutrition and Dietetics, 96  
 Nutrition and Food Science, 251  
 Nutrition and Food Sciences, 143
- Ocean Engineering, 87, 144, 253  
 Ocean Studies, 41  
 Oceanography, 144, 254  
 Oceanography, Graduate School of, 5  
 Off-Campus Study: for Undergraduates, 20, 27; for Graduate Students, 115  
 Older Students: *See* Independent Students  
 Ombud, 9  
 Organizations, Student, 15  
 Orientation, International Students, 11  
 Orientation, Transfer Students, 11  
 Orientation Workshops, Summer, 11
- Parent Involvement, 17  
 Parents Council, 17  
 Part-Time Students, 18, 115  
 Pass-Fail Option: Undergraduate, 43; Graduate, 115  
 Payment of Fees, 21, 27  
 Pell Marine Science Library: *See* National Sea Grant Depository  
 Ph.D. in Education, 191  
 Pharmacognosy, 145  
 Pharmacology and Toxicology, 146  
 Pharmacy, 257  
 Pharmacy, College of, 109  
 Pharmacy Practice, 259  
 Philosophy, 62, 259  
 Physical Education and Exercise Science, 260  
 Physical Education/Exercise Science, 104, 146
- Physical Therapy, 146, 263; Early Contingent Admission to the M.S. Program, 38  
 Physical Therapy Clinic, 99  
 Physics, 62, 147, 265  
 Physics and Physical Oceanography, 63  
 Plant Sciences, 133, 267  
 Policy on Satisfactory Academic Progress, 25  
 Political Science, 64, 148, 269  
 Portuguese, 272  
 Pre dental Programs, 39  
 Prelaw Studies, 38  
 Premedical Advisory Committee, 39  
 Premedical Programs, 39  
 Preprofessional Preparation, 38  
 President's Office, 288  
 Preveterinary Programs, 39  
 Prior Learning Assessment, 274  
 Pro-Seminar, 74  
 Probation and Dismissal, 43  
 Proficiency Examinations, 30  
 Program Requirements: Undergraduate, 32; Graduate, 116  
 Programs of Study: Undergraduate, 5, 45; Graduate, 5, 119  
 Providence Campus, 17, 73  
 Provost, Office of, 288  
 Psychology, 64, 149, 275  
 Public Relations, 37, 65, 275
- Quality Points: *See* Grades and Points  
 Question and Answer Sessions for Visitors, 29
- Reading Education, 129  
 Readmission, 27  
 Reassessment of Fees, 21  
 Refund Policies, 22  
 Regional Student Program, New England, 31  
 Regional Students, 18  
 Registration: Undergraduate, 27; Graduate, 113  
 Registration and Records: *See* Enrollment Services  
 Religious Studies, 276  
 Research at University, 8  
 Research Office, 8  
 Research Resources, 7  
 Residence Halls, 11  
 Resident Students, 18  
 Resource Development Education, 276  
 Resource Economics, 96, 276: *See also* Environmental and Natural Resource Economics  
 Returned Check Fee, 21  
 Returning Student Deposit, 20  
 Rhode Island Interinstitutional Exchange, 41  
 Room and Board, 21  
 ROTC: *See* Army Reserve Officers Training Corps  
 Russian, 65, 278
- Satisfactory Academic Progress, Policy on, 25  
 Schedule of Courses, 27  
 Scholarships: Undergraduate, 25; Graduate, 26  
 Scholastic Standing of Graduate Students, 116  
 School Library Media, 152  
 School of Education, 99  
 Second Grade Option, 43  
 Secondary Education, 129, 152  
 Service Learning, 278  
 Sociology, 279  
 Soil Science: *See* Water and Soil Science  
 Sororities and Fraternities, 12  
 Spanish, 65, 150, 280  
 Special Academic Opportunities, 40  
 Special Collections, Library, 7  
 Special Populations, Minor in, 37  
 Special Programs for Talent Development, 31  
 Speech-Language Pathology and Audiology, 150  
 Sports: *See* Athletics and Recreation  
 State Aid to Students, 25  
 Statistical Science, 66  
 Statistics, 151, 282  
 Student Affairs, Office of, 288  
 Student Discipline System, 14  
 Student Employment, 24, 25  
 Student Exchange Programs, 41  
 Student Government, 13  
 Student Health Services Fee, 19  
 Student Life and Services, 11  
 Student Orientation, 11  
 Student Records, Confidentiality of, 17  
 Student-Run Businesses, 16  
 Student Services, 11, 14  
 Study Abroad, 42  
 Summary of Enrollment, 321  
 Summer Orientation Workshops, 11  
 Summer Sessions, 73, 114, 115
- Talent Development, 13, 31  
 Teacher Certification, 38, 151  
 Teacher Education, Office of, 38  
 Teacher Education Programs, 38  
 Test, Professional: *See* Counseling  
 Textile Marketing, 105  
 Textiles, Fashion Merchandising, and Design, 106, 152, 283  
 Thanatology, 108  
 Theatre, 49, 285  
 Theses and Dissertations, 118  
 Time Limit (for Graduate Degrees), 114  
 Timeline, URI, 321  
 Tours, Campus, 29

- Traditions and Transformations, 74  
Transcripts, 20, 27  
Transfer Credit: Undergraduate, 30; Graduate, 112  
Transfer Orientation Programs, 11  
Transfer Students, 30  
Tuition, 19  
Tuition Waivers, 21
- Undergraduate Degrees, List of, 6  
Undergraduate Programs, 5, 45  
University Advancement, 288  
University Aid to Students, 25  
University Chaplains, 14  
University College, 46, 112
- University Community, the, 9  
University of Rhode Island Freshman Seminar, 286  
University Ombud, 9  
University Student Discipline System, 14  
University Year for Action: *See* Internships and  
    Experiential Education  
Urban Affairs, 67  
Urban Horticulture and Turfgrass Management, 97  
URI 101, 32  
URI Foundation, 9
- Veterans Educational Benefits, 27  
Veterinary Science: *See* Fisheries, Animal and  
    Veterinary Science
- W. Alton Jones Campus, 5  
Water and Soil Science, 97  
Wildlife and Conservation Biology, 98  
Withdrawal from the University, 43  
Women Students, 12  
Women's Studies, 67, 286  
Work-Study Program, 24  
Writing, 279  
Writing Center, 15
- Zoology: *See* Biological Sciences